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Dr. Robert Q. Marston, R.Q.W.

On behalf of the Association of State and Territorial Directors of Nursing, we are pleased to have as all of you gathered to the biennial meeting of the National Institutes of Health, (U.S.) Office of the Director of Nursing.

DR. ROBERT Q. MARSTON'S

SPEECHES AND ARTICLES

Volume I (cont.)

We at NIH are happy to have you here for a meeting with us. Together leaders in nursing throughout the country are here. We welcome the opportunity to share the knowledge and research in specific areas of nursing with you. You are the national leaders.

*For presentation before the Association of State and Territorial Directors of Nursing, December 1, 1988.

**Director, National Institutes of Health, Department of Health, Education, and Welfare.

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DR. ROBERT D. MARSTON'S

SPEECHES AND ARTICLES

Volume I (cont.)

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WELCOMING ADDRESS*

Robert Q. Marston, M.D.**

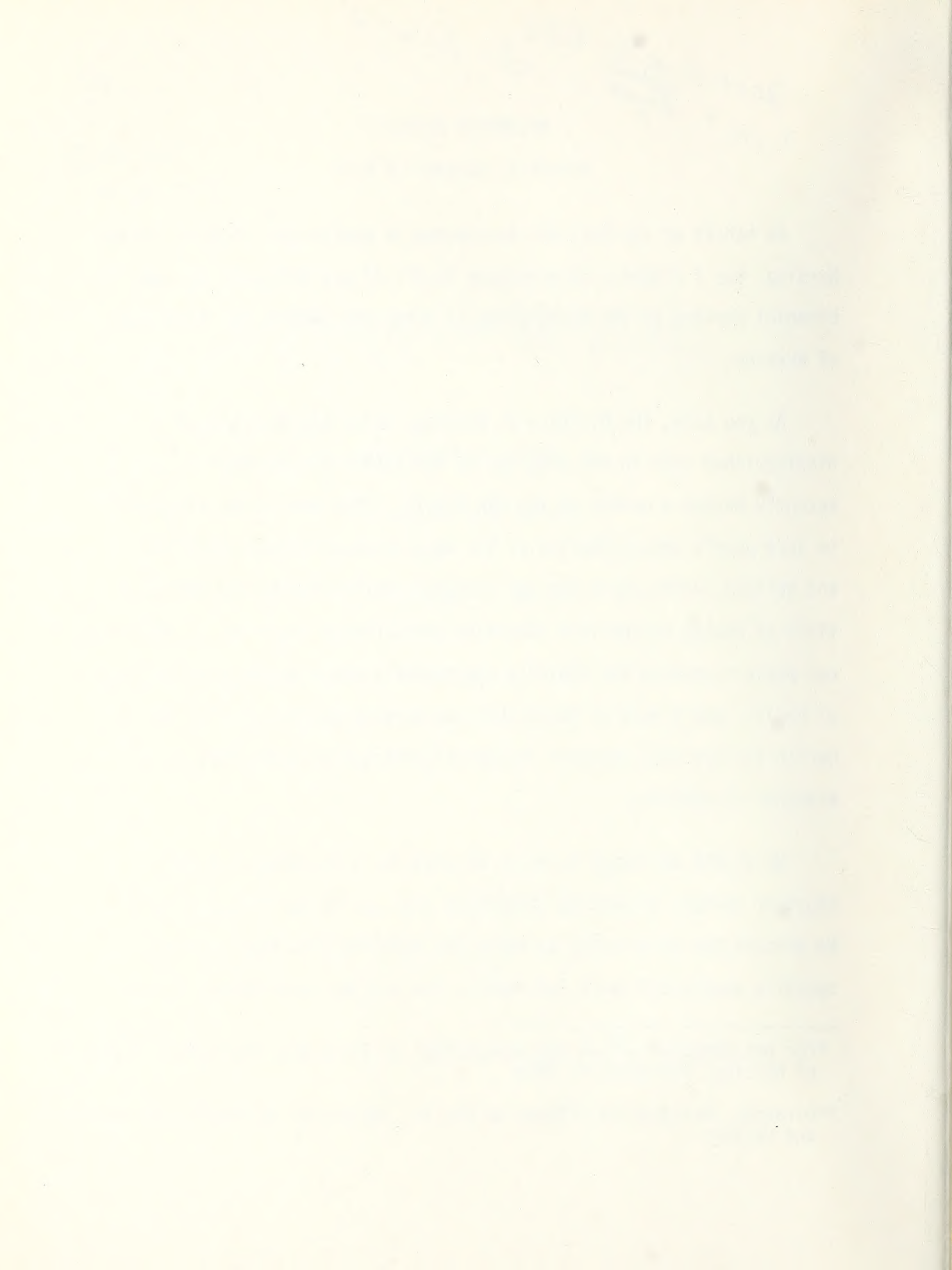
On behalf of the National Institutes of Health and its Division of Nursing, may I extend a warm welcome to all of you delegates to the biennial meeting of the Association of State and Territorial Directors of Nursing.

As you know, the Division of Nursing, which has long played a distinguished role in the programs of the Public Health Service, only recently became a member of the NIH family. This change was effected in last year's reorganization of the Department of Health, Education, and Welfare, under which NIH was assigned responsibility for the broad field of health professions education and manpower training. I feel that our present mandate for training represents a sound approach to the field of health, and I have no doubt that the nursing programs of the Public Health Service will continue to make significant contributions to all branches of medicine.

We at NIH are happy to serve as host for a meeting which brings together leaders in nursing throughout the country and its territories. We welcome the opportunity to share the knowledge you have of your own specific geographic areas and needs. You are the contributing forces

*For presentation before the Association of State and Territorial Directors of Nursing, September 8, 1969.

**Director, National Institutes of Health, Department of Health, Education, and Welfare.



that make this national resource for research and training strong and its achievements relevant.

We think we have much to gain as hosts to this meeting on new patterns for delivery of health care. Since this is our mutual concern, we are neither more nor less than dedicated partners. Good partners do not tell each other what to do, but they may be sounding boards for each other's ideas.

It is a great fortune to this country that nursing is consistently courting change. Through change, nurses are making their own future, and an assured future of scientifically-based nursing care for patients.

Several years ago, the nursing profession took note of the trend toward collegiate education for nursing practice, and enunciated the position that education for nursing should indeed depart from the old system of apprenticeship in hospitals and ally itself with institutions of higher learning. To some this stand appeared revolutionary, and it will be remembered that many hospital schools of nursing and their graduates reacted with a sense of dismay and disenfranchisement.

Actually, this stand has advanced the cause of nursing. It has helped to ensure that the Professional Nurse Traineeship Program, which provides aid to prepare nurses academically and professionally for leadership, would continue to have Federal support. At present, 18 graduate nursing programs are using traineeship funds to prepare nurses for leadership in the public health field.

Through your position on nursing education, you have changed and raised the sights of nursing schools. You have been instrumental in making special-project grants for improvement in nurse training a provision of the Health Manpower Act. Under this provision, schools may now undertake to strengthen their educational resources, attain accreditation, and also adapt their curriculum as changes in nursing practice occur.

Extraordinary strides have been made through the research programs that directly involve nurses. The coronary-care unit that was set up a number of years ago at Philadelphia's Presbyterian Hospital, with the help of a Division of Nursing grant, has been a model for coronary-care units throughout the country. The advanced system of nursing care that was developed in that unit relies on the nurse's independent action to recognize and terminate lethal arrhythmias. A year or so ago, the House of Delegates of the American Medical Association gave its official approval to this life-saving system of nursing care--a system which is the embodiment of impressively beneficial change in the delivery of health services.

Besides saving lives, this research project has made it plain that nursing specialization is as important to patient care as specialization in the field of medicine. Physicians have had to specialize because there was too much to know, too much new scientific material for each physician to command and apply. Nurses, through their own determination to bring progressive change to patient-care services, are now preparing themselves for specialization in increasing numbers. Over 20 graduate schools of nursing are currently receiving grants from the Division of Nursing to prepare nurses as clinical specialists.

Harking to the voice of specialization--a project and product of change--the Division of Nursing is now supporting extramural research to develop a system of intensive nursing care for severely retarded patients. Another extramural study is establishing nursing measures for patients with chronic renal disease. Nurse researchers are also designing appliances to facilitate the nursing care of quadriplegics.

Your initiative and foresight will usher in many more changes to improve the care of patients. We invite these changes and we honor them. We invite you also to use us, here at the National Institutes of Health, as a sounding board for your thoughts and an instrument to help you serve the people of your States.

After your meetings have concluded here, we hope you will allow us to show you some of the activities of this campus in which we take such great pride.

You may, for example, wish to visit the National Library of Medicine and its automated Medical Literature Analysis and Retrieval System--MEDLARS for short. Or you may wish to see our new heuristics laboratory; it devises methods to help computers discover solutions to complex scientific problems, and already has developed a computer to simulate and react like an intelligent human being.

And now, thank you again for coming here, and for affording us this opportunity to work more closely with you.

THE HEALTH PROFESSIONS AND THE QUALITY OF LIFE*

Robert Q. Marston, M.D.**

I have chosen today to talk about the health professions and their potentiality to modify what many, for want of a better term, have called "the quality of life." Although it would hardly be possible to say anything very profound or new on the subject, it is certainly an important one--a timeless one--and well worth some serious thought on our part.

Words like "quality," "excellence," "meaning"--value words as applied to the general concept of life--pose difficulties in terms of goals, evaluation or programmatic implementation. Those of us in medicine and science would be more comfortable with more quantifiable terms, such as life expectancy, work days missed, or infant mortality. Even when we quote Disraeli as saying that health is the foundation of the State's strength and happiness, many of us tend to think not of the positive side--the tone and temper of a robust people--but rather of the influence on society of disease, disability and death. And this is only natural, for medicine is concerned with such matters and must measure its

*Keynote address, Annual Assembly, George Washington University School of Medicine, Washington, D.C., September 15, 1969.

**Director, National Institutes of Health, U.S. Department of Health, Education, and Welfare.

successes and its failures in such terms. Nevertheless, life is not merely existence, and death is not the great tragedy of mankind.

Huxley in 1894 says that the most important of the arts is living. So, this morning I would direct your attention to the positive--to the roles of the health professions in improving, if you will, the human condition. One must be selective in such a discussion, and I shall limit myself to a few words under each of three subtitles: first, "The Health Professions and the Sick Room"; second, "The Health Professions and Populations"; and finally, to be quite parochial, "NIH and Its Programs" as those relate to my subject today.

The Health Professions and the Sick Room

Sir William Osler expressed amazement that society treated the physician and the nurse as kindly as it does, since most people's contacts with these professions usually evoke images of the grim specter of grave illness. In this day of vaccinations, miracle drugs, well baby clinics, and dramatic life-giving surgery, even the hospital has long since ceased to cast the shadow of doom; but we must never forget that the fear of illness is a constant companion of mankind, and that the health crisis has an indelible effect.

In his novel "Of Human Bondage," W. Somerset Maugham depicts the impact of a clubfoot on the life and career choice of a young man. This probably symbolized the author's choice, in view of his speech impediment, between a career of writer and that of physician. At the height of the fresh-air treatment of tuberculosis, many people--my father included--were advised to choose occupations in the country rather than (again in his case, to become a chemist) within a more confined environment. One

can think of innumerable cases today in which the quality of people's lives is modified by professional action and advice--asthmatics, hypertensives, diabetics, and those with emotional disorders, to name a few. And quite apart from the specifics of therapy, another way in which the sick room can affect the quality of life--a factor of growing social importance--is through the economic impact of illness.

Let me now cite three indirect but increasingly important ways in which the health professions are today affecting the quality of life. First, through the fear, on the part of individuals and groups, that health services will be inadequate or inaccessible when needed, especially in the urban ghettos and rural areas. Second, through a growing ability to predict the effects on disease processes of modifying life patterns--for instance, smoking, diet, exercise. And finally, through society's rationalization of the need for direct health services as against other desires in the allocation of resources.

The Health Professions and the Population

My second theme concerns the relationship of health professionals to populations. While the term "preventive medicine" would cover most of this, I have some thoughts that go beyond the usual sense of that concept. But let us speak first of the prevention of disease.

One of the greatest catastrophes of all time, with deaths estimated at nearly 22 million, was the influenza pandemic of only 50 years ago. Respiratory diseases not only take a huge toll in terms of human discomfort, but the threat of world-wide mortality from the influenza virus, though not as great as in 1918, is still not completely resolved. The environmental contributions to cancer and chronic pulmonary disease may

expand beyond our present knowledge. And there are the current problems of inadequate utilization of present knowledge in vaccination, of less than optimal use of fluorides for preventing dental caries, and of the abuse of tobacco, alcohol and drugs. To these may be added our meager understanding of the possible injurious effects of noise, human crowding, and other pressures of a rapidly changing and unsettled world. In such areas affecting entire populations, the health professions will be increasingly involved.

Now let us go beyond the simple prevention of disease to the question of augmented health. To cite one or two examples: It is possible that improved prenatal nutrition can in fact elevate the intelligence level throughout life. Genetic counseling is a here-and-now, and it can sometimes have dramatic influences not only on the offspring but on the peace of mind of the parents. For the future, some speak of genetic engineering. Another example is the possible elimination of dental caries--which could prove to have a far-reaching impact on the health of whole populations. Family planning, improvements in the environment, and the general field of normal growth and development, particularly with respect to the aging process, are all areas in which the health professions will certainly be more and more active in seeking to elevate the quality of life.

To some extent, I may be talking about a dream world. First, is health, over and above disability and premature death, really so important? Second, how far can the health professions be expected to go when the critical factors are sociological? And third, can science and medicine, facing large and complex problems through traditionally

conservative approaches, hope to escape the generalizations to the effect that we have failed to meet the broad health problems and that our efforts are not pertinent to the needs of the day.

Loren Eiseley, professor of anthropology and history of science at the University of Pennsylvania, has recently written that the yearning for a life of noble savagery without the accumulated burdens of history seems in danger of engulfing a whole generation, as it did the French philosophers and their 18th century followers. "Those individuals," he says, "who persist in pursuing the mind-destroying drug of constant action have not only confined themselves to an increasingly chaotic present--they are also, by deliberate abandonment of their past, destroying the conceptual tools and values that are the means of introducing the rational into the oncoming future."

The first part of this talk advanced the thesis that the goals of the health professions are directed to the quality of life--that they have contributed much already and are expected to contribute more. But we have also mentioned impediments. These are twofold: on the one hand, the danger that Eiseley underscores--the reckless abandonment of the accumulated means for introducing the rational into the future; and on the other, the danger of so great a rigidity on the part of the medical establishment that no option but destruction is left.

These are questions for a philosopher, not for an administrator of Federal programs. But they set the boundaries within which we work in seeking to implement, with such wisdom as we have, the programs flowing from the legislative and executive branches of our Government which affect medical research and education.

NIH and Its Programs

It is important, I think, to have a full appreciation of the uniqueness of the National Institutes of Health as a Federal agency. The programs of NIH include the support of research and research training through our Institutes and Divisions, the direct and general support of education in the health fields through the Bureau of Health Professions Education and Manpower Training, and the development of bioscience communications through the National Library of Medicine.

For a variety of reasons historical and otherwise, NIH is almost synonymous with academic medicine, constituting in fact a national biomedical consortium concerned with improving the health of the American people. One manifestation of this interrelationship is the fact that more than two fifths of all medical school expenditures in the United States come from this one institution.

Thus, we can see how NIH and academic medicine as a complex can be caught in the same type of dilemma that so many individuals and organizations are caught in today. That is, the dilemma created by rapidly escalating demands and needs at a time of necessary constraints. The problems, then, that I will be discussing for the next few minutes are broad problems--not those of a Marston as Director of NIH, or a Shannon as Director of NIH, or even of an Egeberg, to speak of my new boss, the Assistant Secretary for Health and Scientific Affairs. Certain problems, financial and other, extend across years of administration; and this would surely not be the time, nor I the person, to explore the sundry difficulties of the Nation's institutions of higher learning. Instead, I will confine my remarks to those very real and immediate sources of concern about

the Government's methods and magnitude of support of biomedical research and education--concern that might well embrace our ability, through these two essential ingredients, to influence the quality of life through medicine in the future.

We are just completing the first half decade of the general and direct support of education in the health professions. The Health Manpower legislative proposals for congressional debate next spring are currently under review. Thus, today I can only emphasize the high priority that President Nixon, Secretary Finch, and Assistant Secretary Egeberg have already given to this area. We at the NIH program level concur fully with this high national charge.

Although we have had longer experience with the Federal support of science, we do face important questions. Let me begin by quoting from a Committee print prepared for the Subcommittee on Government Research of the 91st Congress, July 1, 1969:

The close of the 1960's is characterized by a growing skepticism about the potentials of science and technology which is manifested in a near zero growth rate of federally supported research. This is in part derived from the gradual erosion of the political foundation for science together with the growing lack of public confidence in the promises of the scientific community. Symbolically, science and technology has always been a two-edge sword. Knowledge is amoral and can be either used fruitfully or misused. In addition, the more sophisticated we, as a nation, become, the more we realize that a social price is frequently paid for scientific progress. Harmful and often unpredicted side effects accrue from the application of technological know-how.

The fruits of the nation's scientific effort have greatly enhanced man's understanding of and ability to control himself and his environment. But with greater understanding come large responsibilities. It is therefore imperative, now more

than ever, that scientific knowledge be applied more judiciously and prudently, and with a greater sensitivity to optimizing the short- and long-term effects on society.

Every legitimate effort should be taken to increase the financial support for the sciences, especially the social sciences. To this end, open and viable debate should precede conscious decision-making and, at the same time, serve to inform the public of the importance of scientific research--the importance of which should be reflected in national budgetary priorities.

If we particularize about biomedical research programs, essentially the same facts emerge. That is, NIH budgets since 1967, including our current 1970 budget, provide no increase during this four-year period in biomedical research funds. Meanwhile, there has been inflation, increased sophistication of research, and the creation of new Institutes and programs. Thus, inescapably, we are supporting less biomedical research at present than we did in 1966. And since NIH is the predominant source of such support, the Nation is actually doing less biomedical research today than it was a few years ago.

A case in point which represents the difficult judgments we are having to make was reported on the front page of The New York Times last week. It was necessary to alert 19 of our clinical research centers of the possibility of closure. The total of 93 centers, most of which are affiliated with major medical schools, constitute a grant activity initiated in 1960 and considered a vital link between laboratory science and medical practice.

The likelihood of a cutback in this program in the year ahead is so great that we have felt impelled to warn the directors of a substantial number of these programs--about one in every five--that they may have to close down next year because of our inability to fund the

program at its present level. This warning and the human factors involved impart a degree of visibility that commands attention.

I believe this action illustrates well the nature of the dilemma we face. We cannot absorb reductions of the magnitude now confronting us simply by applying a percentage formula across the board. Inevitably, we are compelled to assess all of our program categories and to weigh their importance in relation to our over-all goal. The consequence of such scrutiny is the establishment of priorities--that is to say, a decision to select out certain programs as candidates for reduction. We believe this is a sounder approach to the problem of fiscal constraints than merely relying on a percentage formula for distributing reduced funds on an equal basis. In short, it is preferable to discontinue some activities altogether than to jeopardize the entire program by further erosion.

I had thought to stop at this point until the considerable public interest in NIH research programs occurred last week. The news stories and finally the press conference by Assistant Secretary Egeberg centered on this year's reduced funding level--not as severe, we hope, as previously feared--and on the possible closure of the 19 clinical research centers discussed previously. I should like to speak more broadly, though briefly and factually, on the present state of support of biomedical research in this nation.

- Since World War-II, research in the biomedical sciences has represented one of our great national achievements, whether measured by our 40 or so Nobel Laureates or by the fact that one no longer sees children crippled from polio.

- Support of such research has become heavily dependent on Federal sources, primarily through NIH programs.

- NIH research support has been allocated mostly to academic institutions. For instance, examination of medical school budgets shows

- that in 1958, Federal funds comprised 30 percent of total expenditures, and by 1967 this figure had risen to 60 percent

- that in 1958, 2600 full-time faculty members received salary support from Federal sources, and by 1967 this figure had climbed to 9500

- that Federal funds account for 30 percent of all building construction

- and that Federal sources account for 82 percent of the total expenditures for sponsored research.

Although these figures related specifically to medical schools, NIH is directly involved with more than 1000 research institutions, more than 2000 advisors and consultants, and more than 13,000 grantees throughout the Nation who are supported by the research Institutes, the Bureau of Health Professions Education and Manpower Training, and the National Library of Medicine. NIH is indeed at the peak of its excellence and uniquely poised and ready to meet the Nation's health needs.

Against this background, we have entered a period of markedly increased opportunities to capitalize on scientific leads. But this is also a period of

- greatly increased demands on health services,
- an awakened social conscience for more equitable distribution,
- serious manpower shortages,

- uncontrolled increases in cost,
- specialized areas of mounting urgency--poverty and the population problem, for example,
- and finally, just plain unfortunate timing as these forces and opportunities converge throughout the country at a time of fiscal constraints, both at the Federal level and at other levels as well.

While the dilemma of constrained resources, on the one hand, and of rising expectations and needs, on the other, inevitably requires the difficult choices reflected by the news media last week, the problem is exacerbated by the reported precarious financial plight of the Nation's health educational institutions.

I wish to emphasize that I have been talking about important, even vital, national resources. Dr. Egeberg made it very clear on Friday that he views support of research as a most essential and high-priority function.

Within the limitations of even broader national problems, such as inflation, we shall continue

- to seek adequate support for necessary research and research training,
- to avoid precipitous and disruptive decreases in any one area,
- to give complete protection of the basic research and training core essential for the future,
- and to place a high priority on the use of all NIH resources to maintain the integrity of the vital academic institutions.

Above all, our decisions--your and mine--must be in terms of the needs of the people of this nation; not in terms of competition of one

agency versus another, nor defense of a profession, nor protection of the status quo of an institution.

While I have inserted these comments primarily because of the events of last week, they are pertinent, I think, to the opening exercises of this distinguished institution and to my title, "The Health Professions and the Quality of Life," because we have been talking about how the biomedical community can best relate to the broader needs of society.

Now I should like to return for a moment to the general theme. At no time in the history of man has there been greater emphasis than we see today on consideration of the quality of life. This, after all, is the key issue in the dialogue on civil rights, environmental pollution, population problems, education, the city--all the impingements of our social and physical universe. To improve the quality of life for every citizen has become the bold objective of public and private institutions with a wide variety of missions. And the needs for better health and health services are generally recognized, for it is plain that the quality of life without optimum health can never be high.

It is also generally recognized that medical research and research training are essential to the further development of medical knowledge, without which significant advances in health cannot be foreseen. Education of health professionals constitutes the second essential link in determining even the outside boundaries of the health of people. But my point today is a simple one. To the traditional mandate to ease the suffering of mankind, to cure disease, and to prevent premature death, we must add, to an increasing degree, both the mandate and the potential to enhance the quality of life through biomedical knowledge, education and service.

Provisional Record / Compte rendu provisoire CIOMS/TR4/VR

MEDICAL RESEARCH: Priorities and Responsibilities

AUJALEU
BROWN
BTESH
BUZZATI-TRAVERSO
CAVALLI SFORZA
FANCONI
FLORKIN
GRAY
HAMBURGER
HIMSWORTH
KOPROWSKI
KOSTRZEWSKI
MARSTON
PICKERING
PRYWES
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ROCHE
TAYLOR

Round Table Conference organized
with the assistance of WHO and UNESCO
Geneva, 8 - 10 October 1969

C.I.O.M.S.

Table ronde organisée avec
l'assistance de l'OMS et de l'UNESCO
Genève, 8 - 10 octobre 1969

Dr. MARCOTTE, S. S. 1969

RECHERCHE MEDICALE: priorités et responsabilités

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The Conference was held in the Executive Board Room,
World Health Organization's Headquarters, Geneva.

ORGANIZATION OF MEDICAL RESEARCH

Dr. R.Q. MARSTON

Director, National Institutes of Health, Bethesda, U.S.A.

Mr Chairman, one of the problems of appearing late on a programme is that one wishes desperately for the time to revise his comments in view of the preceding discussions. To some extent I did, in fact, anticipate this, and thus I propose to speak more narrowly and more parochially as I emphasise briefly the main features of the organization of medical research evolved by the NIH during a period of rapid growth, to point out the increased complexities occasioned by recent organizational changes, and to think with you about implications during a period of more constrained resources.

Even so, I have deleted a number of comments, especially the need to face quite frankly the fact that the purpose of research is in fact now directed towards the needs of society, not the needs of any single group - whether it be a government agency, scientists, physicians, or spokesmen for a particular categorical or disciplinary approach. Although not appropriate for inclusion in this particular section of the programme on organization, I would point out that the Department of Health Education and Welfare, and also the Office of the President, have already indicated some areas of high national priority in the health field: population, the problems of children particularly from 1 to 5, the serious problems in the organization and delivery of health services, problems of the environment, problem of the cost of care as a very special problem within the general problem of inflation within the States, as examples.

Now this meeting of the Council of International Organizations of Medical Sciences is being held at the end of a long period of expansion in medical budgets.

Since World War II, NIH research programs have grown considerably. There was a sharp rise in the rate of increase of obligated funds in 1957, followed by a gradual downward trend in the rate of increase which has been constant since the early '60s. I shall return to the point later that we in the United States have experienced two atypical periods of research growth—the first from about 1955 to 1965 of unusually rapid growth, and the second from 1967 to the present, of what we have called a "fixed dollar" period.

The nature of the NIH growth is different from that occurring in some other countries. At the time of our expansion after World War II NIH was essentially the research institute of the Public Health Service. The research supported by NIH was nearly all carried out in our own laboratories.

In 1946, 70 per cent of the NIH budget supported direct operations. By 1969, the direct operations accounted for only 21 per cent of the total of \$1,400 million. Furthermore, about half of this amount is spent to achieve targeted goals through contracts with non-governmental organizations. Thus, less than \$100 million - or well under 10 per cent - is spent in our own intramural research programs.

We chose in the United States to emphasize the academic institution as the place where research should be carried out, and in our efforts to expand research, we deliberately sought to involve the academic biomedical community. The expansion of support to university departments, medical schools, and non-governmental research institutes changed not only the face of research, but also that of education in biology and medicine.

In the early years of our growth, most of the expansion went into the project research grants to individual investigators through our several institutes. However it was soon clear that this form of support must be supplemented by

other mechanisms. To choose only training-grants and fellowships, the support of research resources, and I will use an example of some of our problems with one of these, included such activities as the establishment of clinical research centres, the establishment of primate centres, and a third area, the actual construction of research facilities.

The choosing of the academic route, exemplified by the rise in extramural support, meant that we invited applications for research grants from individual scientists. These applications are for support of research projects conceived and designed by the applicant. The originality of the proposal is an important aspect of the application.

As it is so important to our thoughts about the organization of the support of research, my next point is no doubt something that is familiar to many of you. It is the way that this system actually works. It involves first the investigator initiated submission of an application which must be sponsored by some organization, usually a medical school. It comes into the National Institutes of Health, Division of Research Grants which assigns this to a study section which is made up entirely of non-governmental scientists in the discipline covered by the grant. The study section evaluates the scientific merit and, as Dr Rexed pointed out, actually applies a number. We have made a strong point that this is an arbitrary rating, not an absolute qualitative assessment. It is at that point that the application then passes on to the Institute which evaluates the program relevance. The Advisory Council must recommend approval: no-one at NIH has the authority to approve an application and fund it unless it has been recommended for approval by the Advisory Council. The opposite obviously is not true: we do not have to pay all that have been recommended, and indeed that would be impossible with the always present constraints on dollars.

Then the Institute Director, as the responsible program manager, takes final action, the funds are then allocated and the research is done and is reviewed on a periodic basis.

The next point that I want to make is that the responsibilities of the National Institutes of Health were expanded about a year and a half ago to include, in addition to the central grouping of the ten Institutes and the Research and Service Divisions, the activities of the Bureau of Health Professions Education and Manpower Training, which has the responsibility for educational support across the health field, and the smaller but very important activity of the National Library of Medicine. This has increased the opportunities and the responsibilities for the National Institutes of Health.

Here I would like to emphasize a point that I made earlier. That is that while most of our organizational and policy decisions were made during a period of rapid growth, in fact we have been living now since 1967 with essentially a "fixed dollar" budget, which means that we are paying for less research today than we were in say 1966, not only because of the general inflation but also because of the increased sophistication of science and also because we have added additional activities during this period of time.

Well, you can well imagine that as a new Director of NIH - and it has been an interesting year - I had looked with great interest at the effectiveness of the organization of NIH developed during a different period, during the time that we have at present. And this has forced us to come to some very serious conclusions concerning the allocation of resources and the methods of making these decisions. It is important to recognize, as has been said here, that in biology and medicine as in other scientific fields it is the young, fresh investigator who is most likely to have the requisite originality and energy to produce original results and the new knowledge we seek.

The support of promising young investigators under our project grants system is generally acknowledged to be a real contribution in the support of medical research. Thus, while we intend to do what is necessary to strengthen universities through institutional grants, it is our firm intention to continue to foster research carried out by young investigators at the outset of their careers.

Through the choice of the academic route, NIH and the biomedical research community have become thoroughly intertwined. At any one time we have approximately 2,000 advisers or counselors, non-governmental people who are involved in the policy decisions as well as the detailed decisions in the allocation of national resources. Because of the magnitude of its operations, NIH, whose mission is to promote the health of the people through the support of research, education and the National Library of Medicine, has become the principal determinant in the making of medical research policy, and exercises a powerful influence on the realization of the nation's health ambitions and on its institutions of higher learning. For instance, if one looks at the figures for the support of academic science generally, not just health science but academic science generally, in institutions of higher learning coming from the Federal Government, the National Institutes of Health now supports 30 per cent of the support of academic science in institutions of higher learning: 30 per cent of the federal support going into these institutions.

Conversely, through the review groups, the scientific community and civic leaders play a significant role in the allocation of funds to specific research projects within the categorical or social intent expressed by the Congress. The problem of NIH support is complicated by its now clear multiple missions.

Now let me turn for a moment to talk about the "fixed dollar" period, this 1967 through '70 period. I cannot tell you how long this period of fiscal restraint will continue. Research will surely continue to share necessary constraints along with other meritorious national needs. Clearly a prolonged projection of a no-growth period in this and in other areas would threaten all of our major national health objectives, and has not been proposed by anyone. The immediate and urgent problem is how best to manage the present situation, and at the same time to prepare for the resumption of growth at a rate which is intermediate between the two extremes we have experienced in the last fifteen years.

Our first concern must be the maintenance of the science base for effective health effort. This requires flexibility in the administration of resources. Thus, even during our constrained period

we have established new activities such as the National Institute of Environmental Health Sciences, a Center for Population Research and the John F. Fogarty International Center. New opportunities such as the rubella vaccine, the use of L-dopa for Parkinsonism or possible approaches to reduce premature death from myocardial infarction must be examined for new or augmented support. Our concern, however, must be that in exploiting new opportunities we do not threaten the basic core of research and research training essential for the future.

Changes will be necessary of course, if only because our mandate has been enlarged. However, I have been impressed with the broad consensus that the following be maintained at all costs: first, a high priority to the investigator-initiated project support; secondly, continued use of a peer judgement review and selective process; third, continued reliance on academic institutions as the primary source of biomedical research and research training; and fourth, the use of multiple mechanisms of support: project grants, training grants, program grants, institutional grants, construction grants, to name only some.

I am in full agreement with this consensus. The problems we are or will soon be encountering are in the following areas: in seeking the support of the best science, to what degree does one protect such areas as the young investigator; such areas as socially urgent problems (for example, population, the environment); the support for the less strong institutions; the support for areas of current promising leads; the support for geographical distribution of Federal resources, a problem in a country as large and as diverse as ours; support for categorical areas.

For the next few years the problem of marked concern about our whole health service system in the United States inevitably will complicate the picture. Medical schools are deeply involved not only as producers of manpower and research but because their teaching hospitals also constitute a major segment of the service system. I have mentioned earlier that the academic institutions constitute the main source of biomedical research, and conversely medical schools are now heavily supported by Federal funds.

For instance, last year 40 per cent of the total expenditure of US medical schools, excluding the patient care cost of course, came from NIH alone, and 60 per cent from the Federal Government.

Although we have a highly developed biomedical research apparatus and capability in the United States the next few years are likely to be complicated by continued unusual fiscal constraints; instability in the health field generally; competing demands for resources; serious questions of relevance of all existing establishments.

On the other hand most thoughtful students of science see the biomedical sciences as exciting and dynamic for the years ahead.

Today, I have asked you to review with me an example of a major national research program. Certain priorities were established, not always by careful design, during a rapid growth phase; re-examined under different conditions, after a period of "fixed dollar" support, the choices become more difficult, but the fundamental priorities are in my view essentially unchanged. Let me examine a specific example in a way of summary.

We established about ten years ago Clinical Research Centers, and this is very pertinent to much of the discussion that we have had here. The purpose of these centers was to provide resources and core support including stable support for the Director of the Center, and the cost of hospitalization of small, but highly specialized, research entities, varying from four to perhaps a dozen or so beds in existing areas of unusual competence. At present we have 93 such centers in the United States, not counting the very large one, and really the prototype on our own campus. In recent years the cost of operating these centers has gone up of course as the cost of hospitalization has increased. There has not been a concomitant increase in the number of dollars, and really on a programmatic basis we have made the decision at NIH not to divert funds in large and continuing amounts from other areas, say from research project grants.

This year we really came to the need to make a decision as to whether we would constrain the dollars in support of all 93 centers, thereby inevitably reducing the effectiveness of all 93, or whether we would consider closing some of them. Now the

process of making this decision becomes important. We, if you will, initiated the process by saying we wanted to look at this area. But in addition to the normal review mechanisms we had a special meeting of the committee - the study section equivalent - to review in detail all of the centers, and then a special meeting of the National Advisory Committee to make a recommendation to me. Once having that recommendation, then we announced to the centers the possibility that some nineteen of them might be closed. But here we had another problem, because these were established because of the need of long-term commitment, and one has the problem of sudden withdrawal of support from ongoing activities. Therefore, we did make the decision that none would be closed without a prolonged period of time at a significant support level. In some instances this will amount to a support at 60 per cent level for as long as two years after the announcement that it will be closed.

The other reason for taking this example though is that, in addition to these problems that represent a problem in geographical distribution, a problem in an impact of research on the educational process, a problem in institutional support, all in one. Now so we have looked at this as a microcosm which brings into focus rather sharply some of the major problems that have been examined at this meeting. It also brings into sharp focus a difference between the executive branch of governments' restrictions - these of the legislative branch - because the executive branch must look at all of the needs and make decisions between competing needs.

In America, as Dr Handler pointed out at the meeting in 1968, there are a number of committees of Congress who may look at only one segment, and thus in this particular instance we are at present in a position where the congressional committee has authorized a higher level of support than the administration is likely to find acceptable. So in addition to all the other things, this particular example also introduces a type of uncertainty that I think is always a part of the administration of large and complex programs.

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And I really have closed on that part of my talk essentially on the word 'uncertainty' because, as the Chairman pointed out at the beginning of this meeting, we have this conference occurring at an unusual time. As I read the discussions of the 1968 meeting, I was impressed with the similarity between that meeting and the discussions yesterday. There is, however, I believe, a difference in tone.

I think there is a sense today of even greater potential in the biomedical science field than even those of us who are in the biomedical sciences believed a few years ago. And this, coupled with the obvious necessity to make difficult choices, I think in retrospect will set aside these few years as being somewhat different years than the ones of the last two decades, and perhaps the ones a little further down the road. Thank you Mr Chairman.

Emerging Public Policy in the Support
of Medical Education*

Robert Q. Marston, M.D.**

I appreciate this opportunity to discuss with you a topic that concerns each of us here today as well as all our fellow countrymen. Both of our nations are experiencing swift and sweeping changes in almost every area of public concern. Health--and the right, not merely the privilege, to receive adequate health care--is competing vigorously with all the issues of the day.

In the past, we in the health field have enjoyed relative immunity from the political and social currents swirling around us. In a sense, health and medicine, and particularly medical education, have been considered above the battle--important to society but removed from its turbulence.

Now, however, this immunity is plainly a thing of the past. Whether we like it or not, we are involved to the hilt in the social dynamics of our times. On the one hand, this has resulted in insecurity, hurt feelings, bitter debate, and at times rather vicious power struggles. On the other hand, few would deny that social pressures can stimulate a valuable objective review of past developments and understandings.

*Delivered at the Fall Retreat of the McGill Faculty of Medicine, Montreal, Canada, October 24, 1969.

**Director, National Institutes of Health, U.S. Department of Health, Education, and Welfare.

I propose tonight to treat this general subject of the relationship of government to medical education by first examining the effects in my country of Federal involvement in three areas--medical research, medical education itself, and finally, health services. This will provide a framework for describing our emerging public policies in the health field.

Most discussions of medical education bring to mind for each of us our own medical school days, and that alone hampers us with amazing effectiveness. In my own case, when I was graduated in 1947--although it was from the only institution that had been expanded significantly in physical facilities over a twenty-year period (expanded, I point out, as a public works, not a health investment)--I came out of a system that was unchallenged and unchanging, having been set very firmly and effectively almost forty years before by the impact of the Flexner report.

That was essentially the end of the quite period. There were the returning veterans, debates about the nature of clinical research and full-time faculties, curricular changes, questions of the relationship of the basic sciences to medicine and of the teaching hospital to the educational process, and the whole array of town-gown problems. But the greatest change was that the Federal Government was about to enter the scene with big money. Some early events that come to mind in this connection are the enactment of the Hill-Burton program for hospital construction throughout the country and Vannevar Bush's influential report to the President, "Science, the Endless Frontier."

During the 1950s, after a delay occasioned by the Korean War, the rapid development of a biomedical consortium between the Federal Government and the academic institutions and other nonprofit agencies of the Nation was implemented with great vigor; and almost a decade later, in 1963, the Government enacted laws to support on a matching basis the construction of additional schools of the health professions. Due to the long lead time required, it will be 1974 before the first medical school graduates aided by Federal legislation will be providing patient care on a full-time basis. Indeed, it was not until four years ago that our basic manpower legislation had authorizations for loans and scholarships to needy students.

One could conveniently look at 1965 as the turning point in our way of doing business in the health field in the United States. This was really the first time that the Federal Government had moved willingly and openly to support education in this field, including construction, institutional support, and provision of special incentives toward meeting national needs through student assistance. At the same time, a major move in the financing of a segment of medical care was included in the Social Security amendments for Medicare and the passage of Medicaid. Finally, the Regional Medical Programs were born--designed to relate differing levels of capability on a regional basis--and were soon followed by the Comprehensive Health Planning legislation.

A public relations consultant to the American Medical Association, Philip Lesley, has said, ". . . if we keep things as they are, on an even keel, we have prevented success. So, inevitably, when we succeed--when

we bring about progress--we create change. And change then challenges our success, because the patterns that led to our success no longer fit the bright new conditions we have created."

My point is that in 1965 a number of powerful new forces came into play which are the crux of any discussion of the Federal Government and medical education in 1969. Beyond that, the activation of these forces in 1965 resulted in a series of changes which must now be taken into account. Thus our problems of 1969 and '70 are quite different from our problems of 1965 and '66.

Several factors outside the field of medicine itself have merged with great importance. First, the availability and accessibility of health care has become an integral part of that major social issue of the '60s--the questions of the black and the poor. But the problem of availability and accessibility, now spread far beyond the needs of the disadvantaged, has come to include almost all segments of the population.

A second major complication has been fiscal constraint imposed by inflation and Vietnam. This can no longer be viewed as a matter of temporary delay, and has raised basic problems of the degree to which aspirations do in fact exceed probability of speedy achievement.

Within medical education itself, 1969 is quite different from 1965, for it does find itself, in fact as well as in concept, at the very center, indeed at the crossroads, of several powerful forces for change. I would direct your attention to three obvious universes. First, I have already mentioned the relationship of medical education to the problems of health care needs of people. Second, there is the relationship of

medical education to education in general--a much larger and equally dynamic field. Third, the relationship of medical education to science generally, presenting, I think, special problems and special opportunities to nations as well as individuals.

Against this background, let us consider now what is called science policy. I should like to quote from Alvin Weinberg's presentation at the October 18 anniversary of the Association of German Scientists at Munich:

It is incredible, but true, that science and its technologies are on the defensive. The attack, which is most noticeable in the United States, has been launched on four fronts. First there are the scientific muckrakers, mostly journalists, who picture the scientific enterprise as being corrupted by political maneuvering among competing claimants for the scientific dollar. Second, there are thoughtful legislators and administrators who see a waning in the relevance of science to the public interest, especially as we address ourselves to grave social questions that are hardly illuminated by science. To deny connection between science and public affairs weakens one of the main arguments for public support of basic science: that out of basic science comes technology which in turn improves our human condition. Third, there are the many technological critics who urge a slowdown, or at any rate a redirection, of technology because of its detrimental side effects. And finally there are the scientific abolitionists: the very noisy, usually young, critics who consider the whole scientific-technological, if not rationalistic, mode of the past 100 years a catastrophe. To them technology is the opiate of the intellectuals; some of the more extreme would demolish human reason as the ultimate tool for achieving human well being. The consequence, or perhaps a further symptom, of all this harrassment is a reduction in society's support for science.

But now I would hope that I have convinced you that the question of the relationship of the United States Government to medical education is at the very least a complex one and that these are indeed unusual times.

I think that we shall see encapsulated in a very short period, perhaps from 1965 to '75, a whole series of interlocking decisions. Out of these, and despite the mounting intensity of irrational forces, will come responses to the basic needs and desires of society--responses that will take the form of substantial progress in medicine. I feel it is not only inevitable but appropriate that we should be involved at this time in these matters.

Now let us return to some specific, but I hope different, considerations of the so-called three legs of the medical school--research, education, and service. First, the impact of research on education. The United States has had two atypical period of growth in support of biomedical research--the first, from the mid-fifties to the early sixties, a rapid growth period which could not logically be extended indefinitely; and the second, a period of fixed-dollar fundings for the last four years, which again would be intolerable if continued beyond the unusual fiscal constraints occasioned by current inflationary pressures in the United States. By and large, biomedical research support by the Federal Government has been good for medical education. But one may add the obvious point that a better job could have been done--or at least a more comfortable one--had there existed at the time of the biomedical growth broader authorities for the support of education.

There is great concern throughout the biomedical community, both internationally and nationally, about the severe constraints that the support of research is now suffering, along with other vital areas. It is important to understand the context in which this is occurring. Although the lines I quoted from Dr. Weinberg, implying a need to defend science

in general, apply equally to the problems of biomedical research, the proximal causes of the fiscal constraints are in fact President Nixon's determination to bring into control the serious inflation occurring in our country. Most if not all of the Nation supports him strongly in this effort. There has been no policy decision to dismantle the magnificent biomedical research apparatus which has been constructed at great effort in the last two decades. Yet, as the Federal official most responsible for administering this anti-inflationary program, I often find myself more keenly concerned than others as we travel a very narrow path between constraints that can be tolerated for a temporary period and those that are seriously destructive--or as some have said, penny wise but pound foolish.

I am deeply concerned about the impact on academic institutions. There is great consternation in the academic community, as one can see from almost any newspaper day after day. While much of the evidence is anecdotal, I do hear that some individuals are looking for alternative careers, either in medical practice for the clinically oriented or perhaps in industry for basic scientists. I hear of specially disconcerting straws in the wind to the effect that young people are hesitant to enter a field in which uncertainty seems to be a part of life when there are alternative and attractive careers. In short, there is no question that the confidence of the academic community and the Federal Government was severely shaken by the necessity last year to renegotiate the so-called moral commitments, and it will be further shaken as we go through a similar process this year.

Meanwhile, uncertainty about the level of support and priority of research is one more factor plaguing the medical educator.

Well, what do we do, particularly as we look forward to a period of growth somewhere between the two extremes I have described? First, I think it is absolutely essential that we make every effort to re-establish conditions under which the probability of our being able to meet our commitments is high. Second, we will try to protect the new investigators coming into the field. And third, we will seek to ensure the institutional integrity of those institutions providing the environment for biomedical research.

There are many other priorities, including such areas of high social needs as population research, the problems of children, the need for geographic distribution, and the need to protect specific disciplines. An example of this last point is the present concern for the field of organic chemistry. And of course, behind all our thoughts in the determination of future efforts is the absolute necessity of supporting that core of research and research training which is requisite to the continuity of science.

Let me say a word now about another specific impact of research on education. Much has been said and written about the distortions resulting from the support of biomedical research at a time when there was less than adequate support for the educational process. This criticism usually carries the implication that the support of science has occurred at the expense of concern for people. I have never been able to add much to such a discussion because I have never personally experienced a disturbing

polarization of this type. Florey, who I suppose had more influence on me than most others, was at least equally concerned with the treatment of wounded soldiers on the North African battlefield as with understanding the unique and amazing biological products coming from Penicillium notatum.

The second criticism is that science and medical schools have tended to move towards the bizarre and unusual case, thus making it difficult to have the type of experience which is pertinent to the needs of most practitioners in later life. I think there is some validity to this, but that the exercise of caution is indicated. The practice of medicine is basically problem solving, not the development of skill through repetitive routine performance.

The following story I think is pertinent both to medical education and medical research. About a hundred years ago the problem of infection in the hospitals of London was so grave that a special national committee was formed. The best talent of the nation was mobilized, a well-funded council was established, and no effort or expense was spared. Yet little was accomplished in the absence of essential basic knowledge. At about the same time, a young Frenchman was investigating problems of silkworms. There is no need to review how Pasteur's patient studies on microbes, and particularly on pébrine, a devastating infection in silkworms, pointed the way to a success that the British committee had not enjoyed-- eradication of the basic problem.

Another area of concern has been that the emphasis on research has diverted large numbers of people from the practice of medicine. Here the data seem quite clear. Of the 300,000 physicians in the United States, only about 5,000 indicate that their primary activity is research.

Finally and more seriously--and thus most often mentioned, I think-- is the charge that emphasis on biomedical research is contributing substantially to the strain between town and gown--between medical schools and their communities. We scientists and professors can be a pretty arrogant lot, and maybe even need to be to get our work done. But we physicians and people in the community don't like it when we see it. And we see it often enough. We did choose in the United States to support research in academic institutions rather than primarily in research institutes. Here again it seems to me that on balance the record is very clear. This has been a beneficial contribution to every student who has gone through medical school.

The close relationship between education and research has been recognized at the Federal level by the decision last year to place responsibility for the support of education upon NIH. Let me summarize the reasons underlying this move. The impact of research on education has never been more evident than it is today, and few will dispute the influence it exerts upon the present generation of students. The problem, as I see it, has been lack of adequate support for the educational process rather than too much support for research. And the Federal Government's role, until recently, has been largely one of stabilization. Indeed, we had reached the point in some cases where "soft" Federal dollars were sometimes harder than the hard nonfederal dollar. However, I think you would still agree that Federal policy for support of research is better defined than Federal responsibility for support of education.

Let us move then to consideration of the Federal Government's role in education. For a variety of reasons related to national needs, the Government has accepted a degree of responsibility for support of those undergoing training in the health field. This is not the same responsibility it accepts for the support of education generally, nor is it the same role it carries out with respect, for example, to graduate training in the biomedical sciences.

There is a rather sharp difference in the Federal role in the support of physicians, dentists, nurses, and allied health workers. To date, this support has not required the type of judgment involved, say, in supporting research projects. Let me be specific here. Until now, the development of a new medical school or the expansion of an existing one has required a series of steps that included local commitment in matching funds, perhaps action by state legislatures, and the establishment of reasonable standards by nongovernmental groups. Once the nonfederal hurdles were surmounted, Federal support has been available for construction, for institutional support, and for student assistance. Until this year, the primary consideration in awarding special improvement grants was, for all intents and purposes, the financial plight of the recipient institutions.

We are now engaged in a different type of decision-making. New legislation that went into effect last July puts the highest priority on increasing the output of physicians and other health personnel.

Last spring Secretary Finch added funds for this purpose through what is called a "physician augmentation" program, for which competitive applications are now being received. Thus, we are in the process of developing new approaches to meet the health manpower problem and to prepare for legislative hearings on this subject next spring.

In summary, we are deeply concerned about national manpower needs and greatly reassured by the high priority which President Nixon, Secretary Finch, and Assistant Secretary Egeberg have assigned to health manpower development. Thus I recently moved my most experienced Institute Director, Dr. Kenneth Endicott, from the Cancer Institute to the Bureau of Health Professions Education and Manpower Training and brought the previous Director, Dr. Fenninger, into my immediate office as Associate Director of NIH.

Turning now to my last area of discussion--the impact of Federal health service programs on the support of the educational process--I assume that this factor, more than any other, was the stimulus for this meeting. Let me start by saying that when Medicare and Medicaid began operations a few years ago, it was the practicing physicians who expected the greatest distortions in their professional life. I would say, however, that in the fall of 1969 the deans of the medical schools are perhaps more concerned with the impact of these two programs on their educational institutions than they are with the Federal role in the support of research or education. This is a very fluid situation, and I can only choose a few highlights to focus your attention on the problems as they are emerging.

First, and perhaps more easily dismissed, is the fact that teaching hospitals have undergone a major re-examination of their methods of financing. It was a common practice in many institutions to overcharge the private patient to make up any deficiencies resulting from the treatment of indigent patients. Service provided under Medicaid, and to some extent other third-party mechanisms, presents problems because some costs are not recovered and, at the same time, "overcharging" of selected patients is ceasing.

The second area of current debate concerns the appropriate conditions under which one can collect for services rendered by faculty and house staff with their combined teaching-patient care role.

A third area relates to increased revenues and how they contribute to the inflationary pressures within the health field--pressures not only among professionals but particularly among supporting personnel, many of whom have traditionally been poorly paid. This is evident in the fact that hospital employees were among the last to come under the minimum wage law. Since Federal dollars have taken over a substantial part of the patient load, and since the Medicaid program depends on varying state determinations of benefits, we have a difficult financial situation made worse by Federal budget constraints that confront all programs.

When I first entered the medical field, there was great concern that the relatively predictable budget of the medical school was constantly being threatened by unpredictable demands for service. It was thought then that such needs raised the question of how the medical school budget

could be protected from the patient-care budget of the hospitals. This question is being raised even more sharply now than it was ten or fifteen years ago. Some go so far as to say that an accurate reimbursement for patient care services would largely resolve the problems of the cost of education.

We are in a period marked by constraints on the research dollar, but also one in which medical education is beginning to receive support. Moreover, it is a period in which the investment in health care generally is rising rapidly. Some say that the total health investment will move by the mid-seventies from the present \$53 billion to \$100 billion. So there is an increasing cash flow, with physicians' incomes rising, though less rapidly than hospital costs. And under these circumstances, there are strong pressures, at least in some institutions, to move toward a greater dependence on income from faculty practice.

This too takes us back--and I think, backward--to all the problems and debates about part-time, full-time, and geographical full-time systems. It is this type of pressure, under the somewhat desperate conditions in which some medical schools find themselves, that should be a matter of serious concern to those primarily interested in education.

I have spent most of my time on these factors because I think it is only against such a background that I can make the rather simple statements I have in mind concerning the emergence of public policy in medical education. First, the major uncontrolled cost element relates essentially to two Federal policies in the payment-for-services area--

the first an insurance one under Medicare, the second a welfare benefits system under Medicaid. Secretary Finch, who places a very high priority on the payment mechanisms, has a committee under Walter J. McNerney, the head of Blue Cross and Blue Shield. I believe he is determined to clarify the Federal policy in these areas as soon as possible.

One moves beyond the Federal role here, and my prediction is that increased investments in health will continue to be made--that a larger proportion of the disposable income of American citizens will go into the health field. And a relatively painless mechanism comparable to payroll deductions or the installment payment for, say, automobiles will probably become universal.

Secondly, a high priority has been placed on the Federal influence in the organization and delivery of health services. But there is a wide discrepancy between the resources to influence this and the magnitude of the problem. It does seem inevitable, however, that a more orderly deployment of resources, especially at a regional level, will evolve, and that there will be much greater reliance on information flowing from what we call health-services research and development than has been true in the past. There is little question that the medical center is the source of the greatest competence in the health field, in addition to providing almost half of the hospital beds. Thus the teaching hospital will be critically involved in these activities.

Third, the problem of health manpower commands a great deal of attention. Not only the supply of physicians, but medical assistance of

great variety as well as the problem of distribution, will be considered in legislative hearings on the extension of the manpower legislation next year. Mechanisms for distributing available talent through inducement, compulsory service, or combinations of the two will undoubtedly be much discussed at that time. It seems to me that the pressures for numbers will inevitably be transmitted through government to the medical schools, and will result in some substantial changes in the way of doing business. This is the only prospect for marked increases in the order of magnitude to compensate, say, for the large numbers of graduates of foreign schools which now constitute our national method of meeting the shortage of physicians.

Finally, and with every emphasis, is my personal belief that American institutions for health professions education will continue to be primary instruments for the conduct of biomedical research; that this will continue to benefit the educational endeavors; and that herein lies the best promise for solving the health problems of the future. Furthermore, biomedical research ranks high among the sciences as an area of unusual excitement and productivity for the years ahead.

October 29, 1969

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Statement by Director, National Institutes of Health

on

1970 Appropriation Estimates

Mr. Chairman and Members of the Committee:

I am pleased to have the opportunity to appear before you this year in a new role. Although my association with NIH is not new--I first worked there in 1951 and, more recently, served for nearly three years as an Associate Director of NIH and as Director of the Regional Medical Programs while that was part of NIH--I have been the Director of NIH for just over a year which is a very short time for a post that during the past 81 years has had only 8 incumbents. However, the newness of my role here today is not due primarily to my own recent appointment but to the fact that I am here to testify about the goals, plans and needs of what is, in fact, a new organization, operating in a new departmental framework, under a new administration.

As a result of the reorganization of the health functions of the Department that was announced last April, NIH is now not only the mainstay of biomedical research in this country but also has responsibility for Federal support of education in the health professions and for biomedical communications. The new NIH consists of three major components:

- ... the research Institutes and Divisions--to which we still sometimes refer, collectively, as 'the old NIH';
- ... the former Bureau of Health Manpower which has been somewhat reorganized and given a new name--it is now the Bureau of Health Professions Education and Manpower Training; and
- ... the National Library of Medicine.

As the organization of the expanded NIH is not only new but also somewhat complex and as its activities are funded through 21 items in the bill, I should like to submit for the Committee's use--and for the record--an organization chart which has been specially prepared for these hearings. It shows

- ... the relationships of the various Institutes and Divisions to the functions of NIH;
- ... which Institutes and Divisions have separate appropriations and the amount requested for each in the budget; and
- ... the name of the witness who will testify for each of these appropriation requests.

At this point, Mr. Chairman, I should also like to introduce the top staff of the new NIH who are here with me today.

Dr. John Sherman is the Deputy Director of NIH.

Dr. Robert Berliner is the Deputy Director for Science and is also acting as Associate Director for Direct Research.

Dr. Leonard Fenninger is the Director of the Bureau of Health Professions Education and Manpower Training. However, Dr. Fenninger has just been appointed to the new post of Associate Director for Health Manpower. He will be succeeded as Director of the Bureau by Dr. Kenneth Endicott who is now Director of the Cancer Institute.

Dr. Martin Cummings is the Director of the National Library of Medicine.

Dr. Ronald Lamont-Havers is the Associate Director for Extramural Research and Training.

Mr. Richard Seggel is Associate Director for Administration.

Dr. Thomas Kennedy is Associate Director for Program Planning and Evaluation.

The three major components of NIH have distinct but complementary functions. The principal reason that led the Department to bring these activities together was succinctly stated in the Department's press release announcing NIH's broadened authority and new role. It said:

"Modern biological science and health professions education are so intimately inter-related that their effective and efficient management within this Department requires that they be the responsibility of a single operational unit.

This will now be the NIH."

This intimate relationship is partly due to the fact that biomedical research and health professions education are largely carried out in the same institutions. For the most part, they require the same kind of facilities and depend on people with the same professional qualifications.

While the interplay of research and graduate education is helpful to both, it is not equally helpful to both. It is possible to perform first class research in an institution which has little or no responsibility for formal education. In fact, NIH's own intramural research activity at Bethesda is an outstanding example of such an institution. However, it is not possible to provide a first class professional education for scientists in an institution in which little or no research is conducted. Especially at the more advanced levels of professional education, the methods, techniques, and the intellectual

discipline of research are an essential part of the educational process. Progress in most scientific disciplines is now so rapid that a new scientist--and I include physicians in that term--must have a keen awareness of the directions of research in his field. His exposure to the potentials and limitations of research must begin as an integral part of his professional education. In fact, as a well-known physician has pointed out, "the faculties developed by doing research are those most needed in diagnosis".

Our efforts to harmonize effectively the support for biomedical research and education must be undertaken under the cross-fire of two fairly common criticisms on which I should like to comment. One of these criticisms is that the support now available for research has unbalanced the academic community and detracted from the performance of its educational function. The truth is that the academic community is out of balance in the same way that a man who has thrown one foot forward is out of balance. If his objective is to take a step forward, he must obviously restore his balance by bringing the other foot forward too. It is true that we have thrown the research foot well forward. The imbalance in the academic community is not due to too much research support but to the unfortunate fact that, until recently, this has been the sole kind of Federal support available. There is a clear and urgent need for comparable educational support. As you know, the Health Professions-Education Act of 1963--and its amendments and supplementary legislation--are designed to provide this sort of support. It is part of the new role of NIH to restore balance by bringing the educational-support programs into line with research-support.

The other criticism often heard today is that research is enticing physicians from the practice of medicine. Let me counter that with some facts.

In the first place, most of the laboratory research in biomedicine is performed not by MDs but by PhDs who are not licensed to provide health care. At NIH, for example, nearly half of the professional staff with doctoral degrees hold some degree other than an MD. Nearly 70 percent of our research grants are for projects on which the principal investigator is not an MD.

Actually, the number of physicians who are mainly engaged in research is surprisingly small. The American Medical Association recently published a statistical summary of the major professional activities of medical school graduates who were living on December 31, 1967. This study shows that of the 296,400 graduates who were still active, 93 percent were engaged in patient care. The other 7 percent was mainly accounted for by 11,400 physicians who were members of medical school faculties and 4,240 who were engaged in administration. The glaring fact is that only 4,726 physicians--or 1.6 percent of the total--had research as their major professional activity. While it is, of course, true that some physicians, especially those on medical school facilities, combine research with their other activities, it is noteworthy that of all the physicians who are not primarily engaged in patient care less than a quarter list research as their major activity.

Physicians engaged in research are, with very few exceptions, engaged in clinical research which must involve a physician. As clinical research is, by its very nature, a combination of research and patient

care, the research-physician has not withdrawn from practice. He is probably providing more intensive and higher quality care for his patients than they would receive if he were not engaged in research.

Finally, it is usually true that a physician of the caliber required for successful competition for research-grant funds could make more money if he devoted himself solely to practice in his specialty. He has certainly not been enticed into research because there is money in it. On the contrary, he is in research because he has intellectual curiosity--and, probably, unique talents for research--and because he hopes to make a fresh contribution to the solution of disease problems. A research grant enables him to do this effectively by making the necessary resources available but it provides neither the initiative nor the motivation.

The growing awareness of the problems in health professions education and, especially, of the deficiencies in the provision of health-care services in this country has understandably diverted attention from the importance and needs of biomedical research. In fact, in some quarters the pendulum has swung so far that research is viewed as an expensive hobby that must give way to more urgent needs. This strikes me, Mr. Chairman, as a little like saying that the goose that lays the golden eggs should no longer be fed.

The ultimate purpose of all health activities must be the prevention or cure of disease--and, when neither of these goals is yet attainable, the amelioration of the effect of disease both in terms of extending the useful life of the patient and of minimizing disability and suffering. This is indeed the purpose of all of the programs supported by the NIH appropriations.

Effective action against disease requires, first of all, a knowledge of what is wrong and the availability of some means for doing something about it. In general, the better our understanding of the cause and usual course of disease, the more likely it becomes that we will be able to develop some means of coping with it. That, in essence, is the purpose of biomedical research: the constant expansion of knowledge and its translation into applicable preventive or therapeutic methods.

During the past decade NIH has contributed to the expansion and strengthening of every major health institution in the country. Almost every major medical advance in this country has to some extent depended on research supported by NIH. Almost every citizen has benefited --and will continue to benefit--directly or indirectly from these research programs.

In fact, research during the past decade or two has completely changed the practice of medicine. Most of the drugs now in common use for the treatment of major diseases were unknown or unrecognized as therapeutic agents when I started medical school in 1943. A whole series of new surgical techniques have been developed that make it possible to intervene in situations in which surgeons used to be unable to help. New and better techniques for monitoring patients and for automating laboratory tests have been developed. Mechanical assistance devices then unknown--such as the pacemaker and the so-called artificial kidney, which is actually an external blood-cleansing device--have already saved thousands of lives. You are well aware of recent dramatic advances in the technology for transplanting human organs.

All of these radical changes in the practice of medicine--and the certain expectation of even more revolutionary advances--are the direct result of the expansion of research facilities, the enlargement of the corps of research scientists, and the provision of funds to support their work. The greater effectiveness of modern medicine is the tangible pay-off for the investment that has been made in medical research.

Three years ago this Committee took the initiative in providing funds to accelerate the development of a vaccine for rubella or German measles. The last epidemic of German measles--in 1964 and 1965--resulted in the birth of some 30,000 children with serious congenital defects. It was the Committee's hope that it might be possible to forestall a repetition of such tragic consequences from the next epidemic which is expected in 1970 and 1971. As you know, a concerted research effort was launched, a safe and effective vaccine has been developed, and a large-scale vaccination program is now underway. We have every reason to expect that the next epidemic will be substantially ameliorated and that most pregnant mothers will be protected from this disease which can inflict such serious and permanent damage on the unborn child. Not only did NIH provide a major share of the support for the research that made the vaccine possible but NIH scientists, working in the laboratories at Bethesda, made major contributions to the development of the vaccine.

I shall leave to the witnesses who will testify for the appropriations of the various research Institutes the pleasant task of reporting to you on significant progress in research against some of the major diseases. At this point, it is, I think, more important for me to

emphasize the serious and bewildering gaps that exist not only in our knowledge of diseases but in our understanding of the intricacies of normal biological processes.

Despite the impressive--and often dramatic--progress that has been made in the prevention, diagnosis and treatment of many diseases, the art of medicine is still a rather primitive science. In fact, a frequent consequence of new advances in knowledge is to raise even more difficult questions or to expose new areas of ignorance. This state of the art lies behind our constant insistence on the importance of what, for want of a better name, is usually called 'basic' research. Basic research is not the opposite of applied research, as so many people seem to think. Basic research is the essential first stage of exploration in a new area. It is basic research that makes so-called applied research possible. With rare exceptions, the practical advances of today are the fruit of basic research done over a considerable period of time by a number of different investigators. I am absolutely certain that any slow-down in basic research will be directly reflected in the postponement of solutions to many disease problems. It is particularly important, in an era of restricted budgets, not to lose sight of the indispensable role played by basic research in achieving the objectives of the NIH programs.

Let me emphasize that there is no policy decision to de-emphasize or slacken Federal support for biomedical research. The research components of the NIH budget estimates for FY 1970 total \$1,071 million --which is five times as much as in FY 1957, the first of NIH's seven years of rapid growth to which so many people now look back nostalgically. Of course, the nation's medical research effort is also very much bigger now and it is true that the budget restraints and the expenditure restrictions of the past two years have had a considerable effect on research-support but they reflect broad economic and fiscal policies rather than a change in research-support policy. The budget estimates before you are very lean but, I would repeat what the Secretary said in his opening statement: NIH has not been specially singled out for cuts. I can only hope that circumstances will not make it necessary to follow the Biblical precedent of matching seven years of plenteousness with seven years of dearth.

I have talked about research at some length but I can sum up my view very briefly. Research is the root on which all other health activities grow. Without that root, no further growth is possible --either in improving the quality of education or the quality of medical

service. The old adage that 'knowledge is power' is nowhere more applicable than in the practice of medicine and, as Sir Howard Florey, the developer of penicillin, has said "the lesson of twentieth century medical science is ... that experiment is the most efficient method of acquiring new knowledge".

However, knowledge is useless unless it is properly applied. The second requirement for effective action, therefore, is highly trained professional personnel.

I have already touched on the urgent need for a more vigorous attack on the manpower shortage in the health professions. Since the beginning of this century the production of physicians has barely kept pace with our growing population. The number of physicians, in proportion to population, is no better now than it was in 1900. At the same time, the need for highly trained physicians and other health personnel has grown sharply as the result of two factors. The first is the greater sophistication of medical practice and the consequent growth of specialization. As a direct result of research, the medical profession is able to deliver care that is infinitely superior to what was possible in 1900 but it takes more--and more diversified--manpower to do it. The second factor is the rise in public aspiration for health care and the consequent rapidly growing demand for high quality professional services. To this we must add, as a third factor for the future, the demand arising from programs designed to bring better health services to the aged and the disadvantaged and to make the best medical care that is technologically possible readily accessible in all parts of the country. The need is thus for a greater number of better trained people in all of the health professions.

We are now in the stage of having to raise our national commitment to medical education to a higher plateau during the 1970's as we raised biomedical research during the late 1950's and early 1960's. The primary burden of doing this will necessarily fall on the Federal government--especially for training at the doctoral level. Medical and dental schools are, in a practical sense, national rather than local or even regional institutions. The AMA study to which I have already referred shows that more than 57 percent of the graduates of U.S. medical schools practice in a state other than the one in which they were educated.

The revised budget estimate for the health manpower appropriation makes provision for a new Physician Augmentation Program. The objective of this program is to expand the output of physicians as rapidly as possible by assisting schools of medicine and osteopathic medicine to increase their total first-year enrollments in the fall of 1970 by 1,600--or 1,000 more than could otherwise be expected. It is hoped that similar increases will be possible in each of the next three years so that by the fall of 1973 there will be an increment of 4,000 medical students over the number that could otherwise be expected.

The cost of this program will be \$10 million for each contingent's first year, of which \$5 million is for 'start-up' costs--such as renovation, purchase of equipment, etc.--and \$5 million for each subsequent year of the four-year curriculum. Total funding for the program will thus be \$10 million in 1970 and would rise by \$5 million per year to \$25 million in 1973 after which the cost would level off to \$20 million per year.

Grants under this program will be awarded, on the basis of national competition, to those schools that document their intention to institute

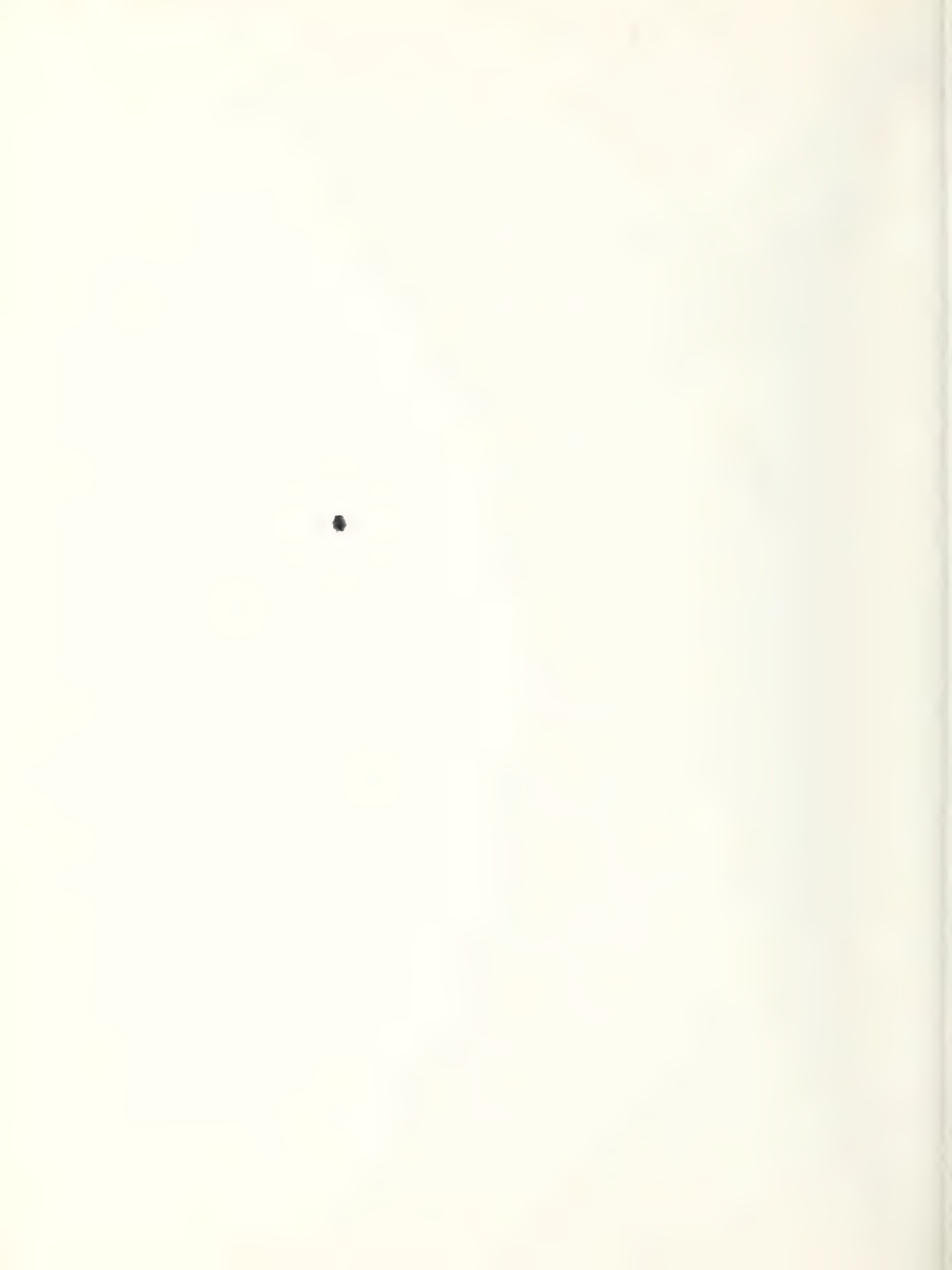
a major increase in their first-year enrollment, and appear to have the greatest potential for achieving major increases with their own resources as supplemented by these funds. However, we are not merely interested in numbers but also in the more effective training of medical manpower. A competitive advantage will therefore be accorded to schools whose applications include imaginative proposals for meeting our critical social needs in health education and health care.

The details of the Physician Augmentation Program will be discussed by Dr. Fenninger when he testifies for the health manpower appropriation. I should, however, like to emphasize that the program will be a major step towards meeting our national requirements for physician and--perhaps more importantly--will also be a major step towards ensuring that all qualified students who wish to embark on a medical career will not be barred from doing so by lack of places in our medical schools. As you know, most of the medical schools, for quite understandable and legitimate institutional reasons, have in the past resisted moving in this direction. There has, however, been a profound change in attitude and there is no longer any reason to doubt that this program will succeed to the extent that resources for it become available during the next few years.

New approaches in medical education are desirable for three reasons. First, simply in order to accommodate a larger number of students without a proportional enlargement of facilities, faculties, and funds. Secondly, in order to maintain quality standards during a period of fairly rapid expansion--and, if possible, to raise them. As someone has said, it would be wonderful if we could double the number of schools in the top 25. And, thirdly, in order to prepare students to experiment with changes in the

delivery of health services such as the greater use of auxilliary personnel for some of the activities that now absorb too high a proportion of the average practitioner's time but that do not require his extensive--and expensive--training.

Questions have been raised about the share of responsibility that the Federal government must assume for the training of nurses and the allied health professions. It is, of course, true that facilities for training nurses and health technologists are more geographically dispersed than medical or dental schools and that their graduates normally find local employment. It has, therefore, been argued, that nurses and technicians constitute a state or regional--rather than a national--core of service personnel and that their training might well be regarded as primarily a state or regional responsibility. However, shortages in these professions are no less acute than the physician shortage and the existence of an adequate number of well-trained nurses and other supporting personnel is no less a national need. Moreover, new national programs such as Medicare, Comprehensive Health Planning, the Regional Medical Programs and the Model Cities program are major factors in greatly increasing the demand for auxilliary health personnel. It is therefore both necessary and appropriate for the Federal government to stimulate and assist the development of suitable training programs for allied health personnel. This is, indeed, the purpose of the institutional and special project grants and the traineeship, scholarship and loan programs authorized by the Nurse Training Act of 1964 and the Allied Health Professions Personnel Training Act of 1966 and subsequent legislation.



The third prerequisite for effective action against disease problems is the constant flow and the ready accessibility of the products of research to the people who are in a position to use and apply them. This is largely a question of communication which, as yet, presents many problems. One of the principal functions of the National Library of Medicine is to provide imaginative leadership in the development of new techniques for the storage, retrieval and dissemination of biomedical information.

Communication of research information is the gateway to its application and it is the most reliable device for constantly enhancing the quality of service to the patient. Communication provides the essential links between research, education and service. It is no less important to the maintenance of a high standard of training. It provides the cross-fertilization that greatly increases the yield of research.

The National Library of Medicine, which is now part of NIH, plays a major national role in biomedical communication. Last year the Congress passed a bill authorizing the establishment and construction of the Lister Hill National Center for Biomedical Communications as part of the National Library of Medicine. The purpose of the Center will be to provide--in the language of the bill--"an urgently required facility for the improvement of communications necessary for health education, research and practice". It is hoped that the Center--when it comes into being--will be able to provide leadership for the rapid development and standardization, on a nation-wide basis, of the technological aspects of biomedical communication, information systems, and network projects.

We are making good progress in creating the John E. Fogarty Center for Advanced Studies in the Health Sciences. A contract for the design of the building was signed last December. The plans are due to be completed by April of next year. Meanwhile, the restoration of Stone House has been completed. Stone House, which was the residence of the former owners of part of the NIH campus, is a substantial and attractive building on the site chosen for the Fogarty Center. It will become a permanent part of the Fogarty Center facilities. Dr. Leavitt, the Director of the Center, will report to you later in these hearings on the programs of this memorial to the late Congressman Fogarty.

I have touched briefly on the major responsibilities of the new NIH. All of the wrinkles have not yet been ironed out of the new organization and a number of administrative problems remain to be solved. In developing the new organization we shall strive for the best balance among the various activities always bearing in mind that their ultimate purpose is to achieve the most effective approach to the prevention and cure of disease.

Last year when Dr. Shannon made his last appearance before this Committee as Director of NIH, he described the budget estimates as "Spartan in character" and as "necessarily limited ... to the amounts that can be justified as essential if the medical research establishment of the nation is to be maintained at an effective level and not be threatened with disarray and deterioration". The budget request now before you is no less Spartan and no less limited to the absolute essentials.

The appropriations requested for NIH total \$1,448,610,000 which is an increase of \$54.1 million over the comparable appropriations for 1969. However, in terms of funds available for obligation--which takes into account carried-over funds that remain available for obligation in some of the NIH programs and restrictions on obligations during FY 1969--the net increase for NIH is only \$1.5 million. The funds requested are distributed as follows among the major activities of NIH:

- ... The \$266.5 million requested for direct operations of the Institutes and Research Divisions includes \$87.7 million for the conduct of research by the NIH scientific staff and \$120.9 million for collaborative projects. The remaining \$57.9 million is for other direct operations, program direction, administrative services and management of the extramural program.
- ... Of the \$626 million requested for research grants, nearly \$164 million is for the special research grant programs --including \$52.9 million for General Research Support --and \$331 million is for non-competing research projects which we already have a commitment to support. This leaves \$131 million for competing grant applications--an increase of \$4.7 million over the amount available for FY 1969 mainly for the new Eye Institute and for family planning research.
- ... The requests for training grants and fellowships total \$179 million--a decrease of \$18.7 million from the amount available for FY 1969.

- ... \$218.0 million is requested for the health manpower programs. Including advanced and carry-over funds, a total of \$247.2 million will be available for obligation, an increase of \$43.0 million over the comparable figure in 1969. A little over half of this amount (\$128.9 million) and \$35.4 million of the increase is for the institutional support programs.
- ... \$10.9 million is requested for dental health activities which is an increase of \$702,000.
- ... For the construction programs, which are now combined in the Bureau of Health Professions Education and Manpower Training, the budget request is \$126.1 million. Together with carry-over funds, this will make \$149 million available for obligation which is nearly \$25 million less than the comparable figure for FY 1969. An increase of \$10.8 million in total obligations is allowed in the construction funds requested for medical schools but this is more than off-set by a \$10.8 million reduction in construction funds for schools of nursing and by the absence of any request for funds for the construction of health research facilities, medical libraries or allied health professions schools.
- ... \$19.7 million is requested for the National Library of Medicine which, with carry-over funds, will result in an increase of \$207,000 in the amount available for obligation. The total obligations included for grants (\$6.5 million) is about \$1.2 million less than the comparable amount for FY 1969.

These figures admittedly do not make full allowance for everything that could, or should, be done. Health activities--important though they are--must, like other important social programs, continue to be limited by over-riding economic constraints. The funds requested do, however, allow for modest expansion in a few particularly urgent ones. The 1970 budget request is, like the 1969 budget, as lean as is possible without seriously curtailing the activities which it is designed to support. I hope, Mr. Chairman, that circumstances next year will permit resumption of a more vigorous pace for these significant health programs.

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OUTLOOK FOR NIH SUPPORT OF
MEDICAL EDUCATION AND RESEARCH

Background Information*

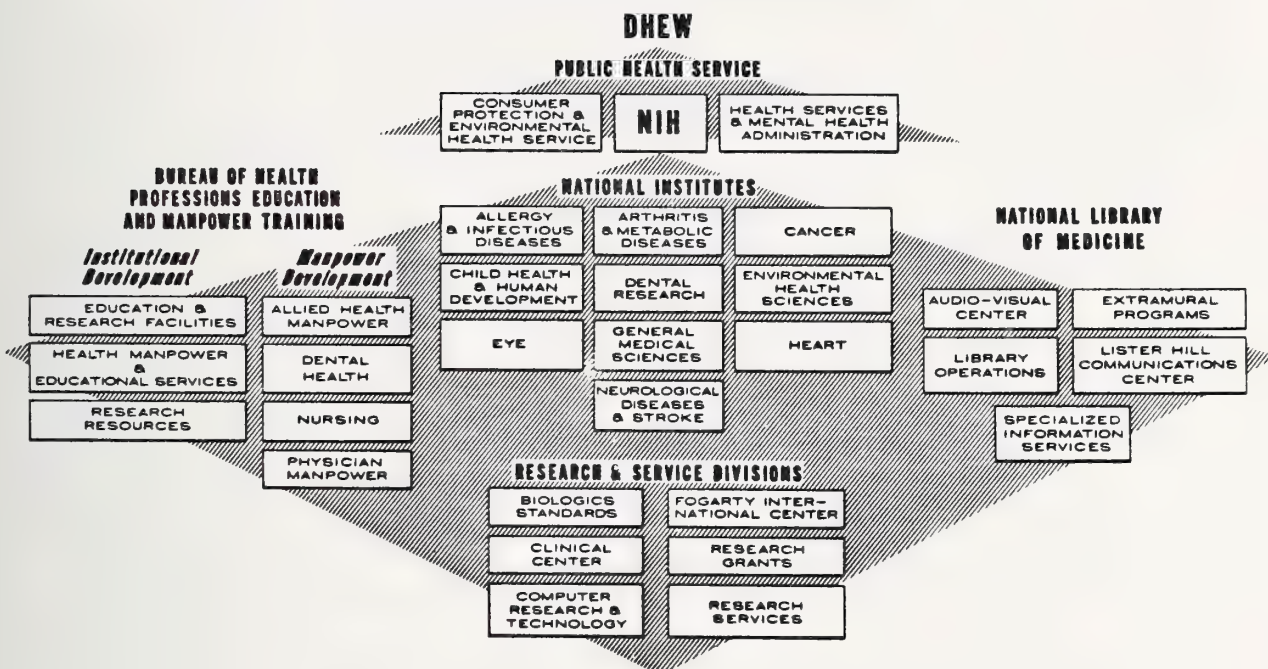
Robert Q. Marston, M. D.**

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*Prepared for annual business meeting of the Assembly of the Association of American Medical Colleges, Nov. 3, 1969.

**Director, National Institutes of Health, U. S. Department of Health, Education, and Welfare

I. Organization of the NATIONAL INSTITUTES OF HEALTH



The above chart represents the National Institutes of Health as now organized. A reorganization of the health components of the Department of Health, Education, and Welfare, effective April 1, 1968, resulted in the following changes:

- The Bureau of Health Manpower and the National Library of Medicine were merged with NIH. (BHM was subsequently expanded to include all construction grants and research resources programs of NIH, and was renamed the "Bureau of Health Professions Education and Manpower Training.")
- A Health Services and Mental Health Administration was established to include most other functions previously assigned to the Public Health Service (including the Regional Medical Programs of NIH).
- A Consumer Protection and Environmental Health Service, containing the FDA, was created as the third major component of an expanded and more comprehensive PHS.
- Direct authority over the new PHS was given to the Assistant Secretary for Health and Scientific Affairs.

Other organizational changes within NIH include:

- . Consolidation of all construction grant programs in a newly created Division of Educational and Research Facilities in the Bureau of Health Professions Education and Manpower Training.
- . Establishment of the Lister Hill National Center for Biomedical Communications in NIM.
- . Establishment of the National Eye Institute.
- . Elevation of the Division of Environmental Health Sciences to a National Institute.

The top NIH staff is as follows:

Director	Dr. Robert Q. Marston
Deputy Director	Dr. John F. Sherman
Deputy Director for Science	Dr. Robert W. Berliner
Director, Bureau of Health Professions Education and Manpower Training	Dr. Kenneth M. Endicott
Director, National Library of Medicine	Dr. Martin M. Cummings
Associate Director for Health Manpower	Dr. Leonard D. Fenninger
Associate Director for Program Planning and Evaluation	Dr. Thomas J. Kennedy
Associate Director for Administration	Mr. Richard L. Seggel
Associate Director for Extramural Research and Training	Dr. Ronald W. Lamont-Havers
Assistant Director for Collaborative Research	Dr. Leon Jacobs

II. PRESIDENT's 1970 BUDGET
(Total Obligations in Thousands)

	<u>1969</u>		<u>1970</u>		<u>Change from</u>
		<u>President's</u>	<u>Change</u>	<u>House</u>	<u>President's</u>
		<u>Budget</u>	<u>From 1969</u>	<u>Allowance</u>	<u>Budget</u>
<u>Institute and Research Divisions</u>					
Research grants*	\$624,567	\$ 634,169	+\$9,602	\$ 638,129	+\$3,960
Training grants and fellowships	197,727	179,000	-18,727	179,000	--
Direct operations	264,513	266,549	+2,036	263,795	-2,754
Subtotal, IRD's	<u>\$1,086,807</u>	<u>\$1,079,718</u>	<u>-7,089</u>	<u>\$1,080,924</u>	<u>+\$1,206</u>
<u>Bureau of Health Professions</u>					
<u>Education and Manpower Training</u>					
Health manpower	204,159	247,161	+43,002	247,161	
Institutional support	(93,446)	(128,859)	(+35,413)	(128,859)	
Student assistance	(95,072)	(102,420)	(+7,348)	(102,420)	
Other	(15,641)	(15,882)	(+241)	(15,882)	
Dental Health	10,185	10,887	+702	10,722	-165
Construction of health education and research facilities	173,875	149,000	-24,875	149,000	
Other	168	957	+789	957	
Subtotal (BHPFMT)	<u>\$388,387</u>	<u>\$408,005</u>	<u>+\$19,618</u>	<u>\$407,840</u>	<u>-\$165</u>
<u>National Library of Medicine</u>					
Grants	7,697	6,492	-1,205	6,492	
Direct operations	12,478	13,890	+1,412	13,890	
Subtotal, NLM	<u>\$20,175</u>	<u>\$ 20,382</u>	<u>+\$207</u>	<u>\$20,382</u>	
<u>Buildings and Facilities</u>	<u>\$14,795</u>	<u>\$3,575</u>	<u>-\$11,220</u>	<u>\$3,575</u>	
Total Obligations**	<u>\$1,510,164</u>	<u>\$1,511,680</u>	<u>+\$1,516</u>	<u>\$1,512,721</u>	<u>+\$1,041</u>

*Includes NIMH's share of General Research Support Grants, which totals in 1969, \$7,755,000; 1970 January budget, \$7,863,000; and 1970 revised budget \$7,755,000.
 **Includes balances as well as new budget authority.

Training Grants and Fellowships

The estimated reduction in extramural training programs for fiscal year 1970--a reduction of \$18.7 million below the 1969 figure--compels us to look at our training objectives and goals realistically. We are dealing here with two universes: the training of Ph.D.'s for research and the training of clinicians for research and academic medicine through our postdoctoral programs.

The reductions in the 1970 budget would require a reduction in the number of trainees and programs. In order to protect the training environment during this period of fiscal constraints, which we hope is temporary, the fellowship program necessarily must absorb a proportionately heavier share of the reduction.

With reference to training in the clinical specialities, we are aware of the disparity that has developed between postdoctoral stipends and house resident salaries. We are seeking a solution to this difficult problem.

Clinical Research Centers

Because of rising hospitalization and other costs under conditions of fixed budget estimates, it is considered necessary to phase out support of 19 of the 93 clinical research centers.

Research Grants

Research grants in fiscal 1970 would be increased by \$9.6 million. This would include increases of \$3.2 million for family planning research, \$1.5 million for the new Eye Institute, and \$4.9 million for non-competing grants and built-in requirements for the Heart Drug Study and grant-supported dental institutes.

Health Professions Education and Manpower Training

In the area of institutional support, the budget provides \$10 million to help medical schools increase enrollments in the 1970 academic year by approximately 1,000.

With respect to student assistance (traineeships, scholarships and loans), the 1970 budget provides an increase over 1969 of \$4.8 million, primarily for expanded enrollments. The Department of Health, Education, and Welfare has indicated that some increases in loans to students in health professions schools are expected through the Guaranteed Student Loan Program of the Office of Education.

The budget for Dental Health Activities shows an increase of \$0.7 million, primarily to support training of dental auxiliaries.

The 1970 estimates for construction grants are in total below those for this year, and include no funds for construction of separate research facilities. An increase of \$10.8 million, however, is provided for construction grants to medical, dental, and related schools.

National Library of Medicine

The 1970 budget for the National Library of Medicine is slightly above the 1969 level. The estimates for grants are \$1.2 million below the 1969 level, and for direct operations (primarily MEDLARS) are \$1.4 million above this fiscal year.

Buildings and Facilities (Direct Construction)

The fiscal year 1970 budget provides only for repairs and improvements.

III. HOUSE ACTION ON 1970 BUDGET

Only the House of Representatives has acted on the President's 1970 budget estimates for the NIH. Hearings are currently underway in the Senate.

The major changes made in the President's budget by the House are as follows:

1. Eliminates requested increase of \$2,754,000 for contracts in family planning research.
2. Switches \$10,281,000 from scholarships to loans for students in health professions and nursing schools.
3. Increases the estimate for clinical research centers grant program by \$3,960,000.

The Department has appealed to the Senate to reverse the changes made by the House. It (1) stresses the high priority of family planning; (2) points to the fact that the scholarship funds for health professions education have already been committed under advance obligational authority provided in legislation and to the need for scholarship funds in nursing to attract the disadvantaged into nursing; and (3) asks for elimination of a number of other House increases, including that for clinical research centers, based on the President's efforts to combat inflation.

IV. FURTHER ADJUSTMENTS IN 1970 BUDGET

A number of reductions below the President's 1970 budget are being effected under the provisions of Congressional legislation and by direction of the President. These are explained below:

A. The Problem

Federal outlays (expenditures) must be restrained to combat inflation.

Since the 1970 budget was submitted, the estimate of outlays for the total Federal budget has risen \$3.5 billion.

B. Actions to be Taken

The Congress placed a ceiling on total Federal outlays in the "Second Supplemental Appropriation Bill, 1969" (Public Law 91-47).

The President has required that action be taken to hold 1970 Federal outlays to the budget estimate of \$192.9 billion.

HEW and other Departments are being required to limit outlays in 1970--under a fixed ceiling established by the Bureau of the Budget.

C. The reductions will be made in 1970 budgeted program levels on the basis of the following:

1. Reduction of programs cut by House action which were not appealed to the Senate.
2. Across-the-board reductions.
 - a. Reduce new and competing research, demonstration, and services project grants and contracts by 10%.
 - b. Reduce the level on non-competing continuations in research, demonstrations and services project grant and contract programs by 5%.
 - c. Hold 1970 HEW employment to current level.
 - d. Reduce other direct operating costs by 5%.
 - e. Reduce obligations for direct construction by 75% (excluding special institutions).
3. Certain selective reductions (not involving NIH).

Special Note: On the average, a reduction of \$1 in outlays requires a cut of \$3 in obligations.

EFFECT OF THESE REDUCTIONS BY AGENCY

<u>Agency</u>	(Dollars in Millions)		<u>Percentage Reduction</u>
	<u>Obligations in President's Budget</u>	<u>Obligations Reduction</u>	
Consumer Protection and Environmental Health Services	\$229.5	\$-30.5	13.3%
Health Services and Mental Health Administration	1,154.0	-70.0	6.1%
National Institutes of Health	1,448.6	-70.5	4.9%
Office of Education	3,226.4	-85.1	2.6%
Social and Rehabilitation Service	8,855.0	-17.9	0.2%
Social Security Administration	2,014.9	--	--
Special Institutions	92.2	--	--
Departmental Management	<u>45.2</u>	<u>-.4</u>	<u>0.9%</u>
Total Federal Funds	\$17,065.8	\$-274.4	1.6%
SSA Trust Funds	<u>35,242.3</u>	<u>-31.9</u>	<u>0.1%</u>
Total HEW Reduction	52,308.1	\$-306.3	0.6%

Special Note: These reductions are tentative and subject to final review by the President after Congress has completed action on all of the Appropriation bills.

V. NIH POLICY FOR NEGOTIATING REGULAR RESEARCH PROJECT GRANTS

During Fiscal Year 1969, financial restraints required special downward negotiation of non-competing awards for regular research project grants. The objective was to fund as many meritorious projects as possible within the money available. At the time, it was hoped that this downward negotiation practice would not need to be continued beyond that fiscal year. However, the President's Fiscal Year 1970 budget, both as initially submitted last January and as revised last April, assumed continuation of the Fiscal Year 1969 practice through Fiscal Year 1970, and expenditure restrictions established this past summer now require some further reductions.

Under these circumstances, it is believed that the advancement of biomedical research will be best served by supporting as nearly adequately as possible those projects for which awards can be made. This requires assurances of continued support for these projects as close as feasible to the recommended levels. Even though the goal cannot be met during the current fiscal year, the long-range aim will be to negotiate the amount of an individual award to the requirements of the project rather than in relation to a fixed budget ceiling on the total research grant funds available.

Special Article

NIH AND THE ACADEMIC LIFE °

ROBERT Q. MARSTON, M.D. ° °

IT IS STRANGE TO RECALL that even as recently as 2 or 3 years ago, it was fashionable to begin speeches on almost any subject by recalling the persistence with which universities survived over the centuries. In spite of the trials and tribulations of social upheaval, political ebbs and flows, famine, wars, and even direct attack, they could be said to have emerged basically unshaken.

My thoughts were even stranger when I tried to decide what John Najarian and I really meant by the title "NIH and the Academic Life." Surely, we were not concerned about the survival potential of NIH, nor were we so rash as to speculate on the longevity of universities. But we may have been skating closer than we knew because we were concerned about the impact of "NIH policy" on the attractiveness of academic life, and we were well aware that if things went one way, people might go another. Indeed, I was not sure I wanted to be the one to give this talk, particularly at the present time. But I was having appropriations hearings, and Senator Cotton from New Hampshire pointed out that the truth might look different under different circumstances. He emphasized this by the following story:

A farmer on his wagon, with his dog sitting

beside him, was going around a curve on a narrow road when a truck ran into him, knocking his mule into a ditch, his dog into the other ditch, and crushing his wagon. About three months later, the farmer appeared in court suing for personal damages. The defense attorney, in examining him, said, "Isn't it true that immediately after the accident you told the truck driver you were perfectly all right? And here you are in court claiming serious injuries."

"Well," the farmer said, "it's quite true that immediately after the accident, I told him I was fine, but if you let me tell the story I think you'll understand why I did that."

"I was knocked down in the middle of the road and was sort of dazed. As I came to, I heard my mule thrashing around on one side of the road, obviously badly hurt, and my poor dog was whimpering over on the other side and couldn't even move. Then I saw the driver get out of his truck and walk over to the mule. He looked at his broken leg and shook his head, then took out his gun and held it at the mule's head and shot him. Next he walked over to my dog, examined him a little, and he shook his head again and raised his gun and shot him. And then he walked over to me, and his gun was still smoking, and he said, 'All right, now how do you feel?'"

I think part of our problem in discussing anything as serious as NIH and the academic life is that we are too close to the scene of

*Editors Note: Banquet address at the Third Annual Meeting of the Association for Academic Surgery held in Boston, Mass.

**Director, National Institutes of Health, U.S. Department of Health, Education, and Welfare.

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the accident, and everybody has a bit of a feeling that somebody is holding a gun at his head.

Let me start by saying what I think most of us mean when we use the words *National Institutes of Health*, and then I'll point out one of the most important aspects of the NIH system. For all intents and purposes, I have never thought of NIH as being "that place in Bethesda," or really of being a Federal agency as such. Quite frankly, I didn't think of it in these terms when I was a scientist there in the early '50s, nor do I even now as Director. Rather, what we have there is a consortium that constitutes the biomedical research and medical educational apparatus of a Nation.

There are many people throughout the country who are convinced that they have more to do with the nature of NIH than any of the people who work in Bethesda, including myself. I am thinking not only of the more than 2000 consultants, study section members, and advisory council members that we have on board at any one time, but also of the members of Congress, the representatives of scientific and specialty organizations, those interested in specific disease entities, the members of the academic community, practicing physicians, lay people in voluntary health organizations, boards of trustees of hospitals and universities, and indeed, representatives of the general public. This intertwining to the extent that an action taken at NIH does affect the academic life, and conversely that the academic life influences this Federal agency, is probably the real reason for our subject tonight—"NIH and the Academic Life."

My second point is directed specifically to research. It has to do with my conviction that the key ingredients in the grants part of the NIH programs are the peer-judgment review system, and that responsible and important research almost always requires more than a year. Both of these concepts are now severely threatened, in my view. This was never really intended but came about through meeting what was visualized as a one-shot crisis. Since my number-one priority is to try to do some-

thing about this over the next few years, let me review the situation.

During the years of rapid growth of Federal research appropriations, that portion of the research grants budget which constituted the noncompeting, continuation "moral commitments" was accepted as a given fact, and the discussion focussed on the funds for competing renewals and new grants as well as the various special projects. As we turned the corner into the flat-funding period that started about 1967, various compensatory mechanisms occurred, but still the basic concept of the moral commitment—as a reflection of scientific and professional judgment, and of the need for investigators to be able to predict resources—was maintained, though all knew that the ability to meet these commitments was dependent on year-by-year appropriations.

Last year, serious inflationary factors, the war in Vietnam, and the introduction of a new mechanism for controlling Federal expenditures (required by the Congress but influenced by the Executive Branch) required on short notice a serious reduction in spending across the Government. In the case of NIH, it raised the basic dilemma of whether we would indeed continue to protect entirely the noncompeting continuation grants and to absorb the entire cut out of competing renewals and new grants.

Largely on the basis of the assumption that this was a unique set of circumstances, and because of the short time available for implementation—and against the background, as you will recall, of a much more serious situation in the National Science Foundation in which actual, not moral, commitments had to be revised downward—the decision was made to try to maintain the number of awards by recovering funds from the noncompeting continuation grants. I must say that the scientific community in general agreed with this strategy, and excellent cooperation prevailed between the administrators at NIH and scientists throughout the Nation.

Unfortunately, a continuation of the same factors of inflation and the war in Vietnam made it necessary again this year to absorb an expenditure reduction on short notice. It is

not feasible to absorb this total amount from the new and competing renewals, but again we will be negotiating downward from the moral commitment level established in the past. In so doing, I have reversed the instructions issued last year when the goal was to maintain the number of grants at the expense of continuing noncompeting grants. This year we realize that we cannot maintain the number of grants and have set limits on the degree to which noncompeting continuations can be negotiated without specific approval by my immediate office.

In our budget projections for 1971 and subsequent years, I will urge that the primary goal be to move back toward honoring the moral commitment as our first priority. Otherwise, I think it is unlikely that we can maintain the integrity of the peer review system in conditions where, on a year-by-year basis, figures arrived at through scientific and professional judgment are administratively negotiated downward over significant ranges. Moreover, I think it unlikely that research can be conducted well without anticipation of the resources that will be available in the year ahead.

Let me repeat that we will not be able to achieve the goal this year and perhaps not entirely next year. Also, we shall continue to carry out the normal, appropriate managerial functions of modifying budgets within the bounds of good administrative judgments, just as we have done in the past.

I am aware that in proposing this route, with the prospect of continued constrained budgets, a whole host of problems will arise. Among the more serious are the possible deferral of some highly visible targeted activities, the need to avoid slighting the plight of the young investigator, problems of geographic distribution, institutional stability, and so forth—each of which might be better served in the short run by keeping the number of grants up at the expense of adequate funding of research supported. These are important matters, but not nearly so important as the need to fund the supported research at levels as nearly adequate as possible and to main-

tain some commitment beyond the current year of support.

At this point I usually find that investigators such as you have concluded that I believe the outlook is dismal. I have said nothing of the kind, at least so far! What I have said is that the sense of uncertainty—lack of confidence—must be corrected. The relation of NIH and the academic institutions requires mutual confidence and understanding, whatever the specifics of funding may be.

Let me turn now to some facts concerning the relationship of the Federal Government and academic institutions. Federal sources provide well over half of medical school budgets, and DHEW provides 90% of the Federal contribution. This emphasizes DHEW's crucial role in supporting the Nation's institutions for education, research, and service in the health field. It also emphasizes the Department's heavy reliance on the schools for the accomplishment of its health missions.

As shown in Fig. 1, the Department awarded about \$686 million to medical schools in 1968. Forty-nine percent was for research and development; 25% for training, mostly graduate and postdoctoral; 13% for construction of teaching facilities; and the remainder went for such activities as improvement of professional education in the health field, regional medical programs, and service programs exclusive of Medicare and Medicaid. Although the Department's total obligations to medical

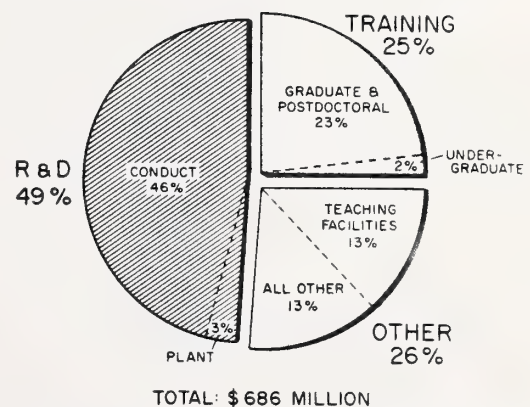


Fig. 1. DHEW obligations to medical schools, by program, 1968.

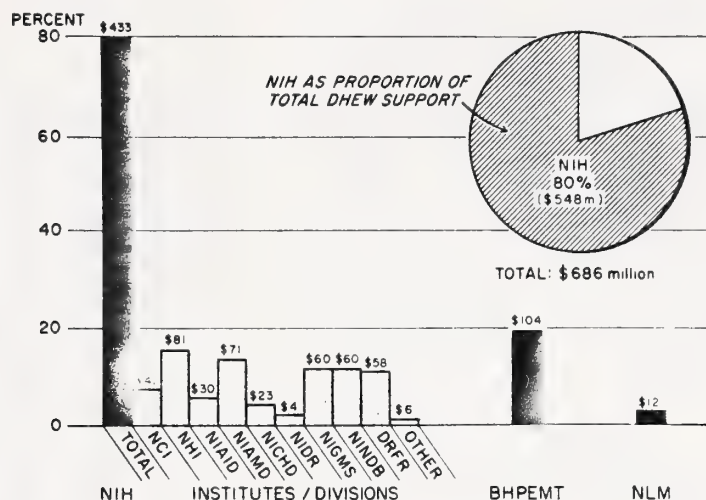


Fig. 2. NIH obligations to medical schools, 1968 (Amounts in millions).

schools increased 7% over 1967, its support for research declined—from \$321 million to \$312, or about 3%.

Figure 2 shows that 80% of the total DHEW support, or \$548 million, was awarded by NIH. Of this, \$433 million is through the research Institutes and Divisions, \$104 million through the Bureau of Health Profession Education and Manpower Training, and \$12 million through the National Library of Medicine. These are large sums of money, and they

prompt many in other countries, and even in this country, to ask what the problem is.

Part of the answer is the fact that NIH has experienced two unique growth periods. The first, as we see in Fig. 3, was from the mid-1950s to the early '60s, when the growth was so rapid that no one expected the rate to continue indefinitely. Figure 4 represents the second atypical period—one of leveling.

In recent years there has been little growth in obligations for research and research train-

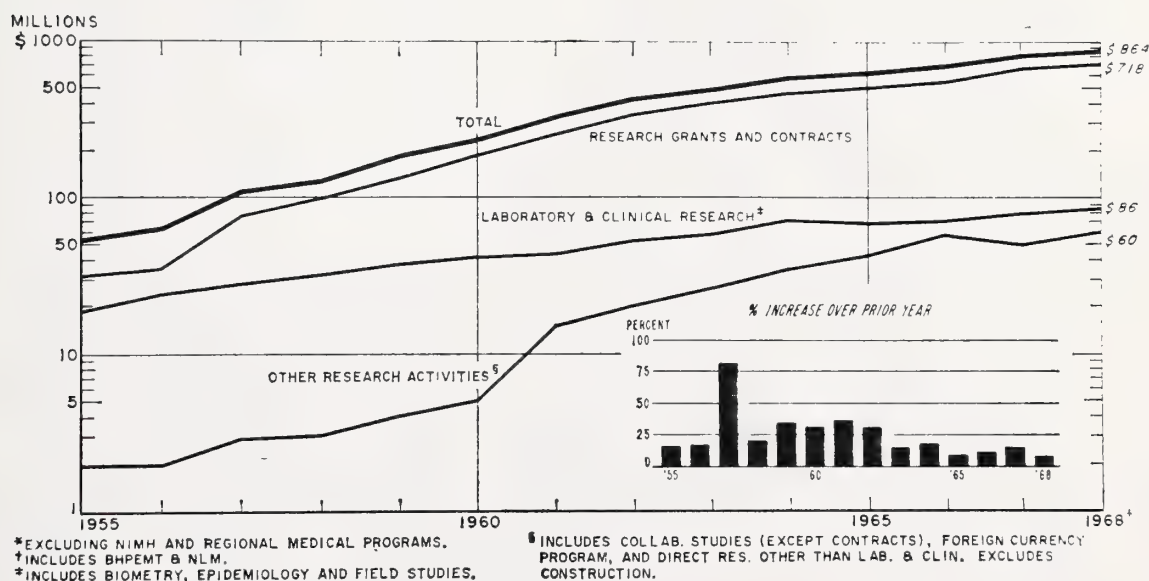


Fig. 3. NIH funds obligated for research, FY 1955-1968.*

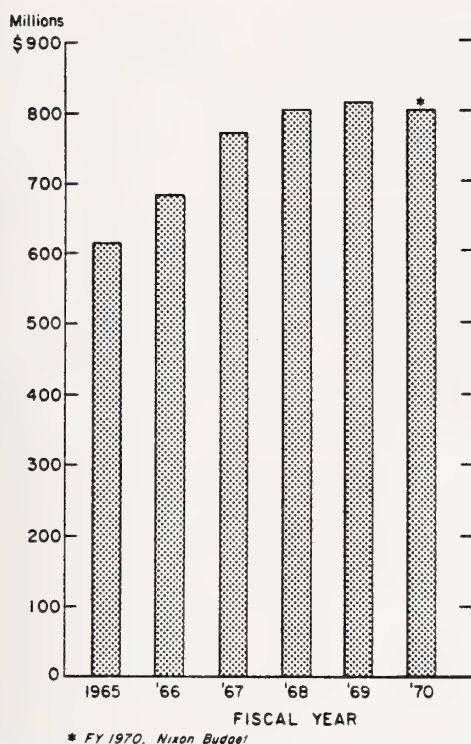


Fig. 4. NIH obligations for research and research training grants.

ing grants, and the fact that costs have increased during this time has of course resulted in effectively less research support today than we had, say, in 1966. A reasonable assumption is that after the immediate problems are resolved, the growth of support for research and research training will be resumed somewhere between these two extremes. Before leaving the subject of research, let me try to sketch the balance sheet in terms of the pressures that will be exerted, first, for a higher growth rate between these extremes and, second, for some lower rate.

On the positive side—that is, moving towards a relatively high rate—one would place the almost surely increased probability of a whole series of advances flowing out of biomedical research having a direct impact on health. L-Dopa for parkinsonism, the German measles vaccine, or the progress against dental caries, to mention three recent examples, are powerful emotional and logical arguments for a major investment in research.

Again, there is the increasing dependence

on the fruits of biological research for the determination of broad decisions going beyond the health of individuals. And here I would point to the immediate impact of findings in the case of cyclamates and DDT. Somewhere over the horizon is the question whether the diet of the American people should be examined in view of the excess mortality from myocardial infarction for American males in the less-than-65 age group. Furthermore, we are well into what history will probably view as the Age of Biology as we learn more and more about the nature of man and of life itself.

Reasons for anticipating a relatively low growth rate, again between the two extremes, would be the increasing competition of all resources—the needs of education, environmental control, and the problems of the city, to pick only three.

Then, as the organization and delivery of health services become more structured, increased visibility given to the health dollar and its uncontrollable nature will make for strong competition among health areas. Research, in such circumstances, might fare poorly as compared with immediate health-care needs. Finally, the support of research does not of itself have strong popular appeal.

On the other hand—to end on the positive side—there will almost certainly be growth in commitment of resources in the health field, often estimated at \$100 billion dollars by the mid-1970s. One may expect that a proportion of this will go toward support of the main determinant of future medical practice. On balance, I feel sure the effective pressures for increased support will in fact prevail during most of your careers. Secretary Finch, earlier this week, said it is unthinkable that we should not maintain the momentum of biomedical research.

Now I should like to mention the other major activity of NIH—the support of professional education and manpower training. The President, the Secretary, and Assistant Secretary Egeberg have spoken in the strongest possible terms concerning the need for more health personnel. Earlier this week, at the dedication of two research buildings,

Secretary Finch talked about the health crisis. He said, "It is a crisis of escalating costs, of inadequate facilities, of uneven resource distribution, and at the core, interlocking with all the other aspects, it is a crisis of manpower."

Experience with the financial support of education is limited in both time and dollars committed so far. The basic legislation was passed first in 1963 under the title Health Professions Education Assistance Act; then in 1968 an omnibus Health Manpower Act was passed to extend and amend earlier legislation.

In the case of medical schools, NIH can provide funds for construction, either of new schools or within existing ones. It can offer student assistance through scholarships and loans and direct support of medical schools through the so-called special project grants. These are designed to stabilize financially shaky institutions, to stimulate increased enrollment, and to seek greater efficiency and effectiveness in education. In addition, there is a formula grant on the basis of number of students enrolled. The same type of support is available for schools of dentistry, osteopathy, optometry, pharmacy, veterinary medicine, podiatry, and public health, while separate legislation provides somewhat modified support for schools of nursing and for the allied health fields.

Since the 1968 bill provided for 2 years' support only, there will be debate in the Congress this coming spring on the extension of the manpower legislation. Hopefully, consolidation of this legislation will stimulate appropriate debate on how best to arrange for this aspect of NIH and the academic life. You have an opportunity as individuals and as an organization to contribute to the discussions.

In so doing, you will want to recognize that these are unusual times indeed. We have encountered some bad timing. Student pressures, community pressures, explosive demands for service are occurring at a time of major insecurity in many medical schools. Changing methods of payment for services, coupled with skyrocketing costs, and often accompanied by decreased research support are raising serious

problems in institution after institution. In some areas we seem almost to be experiencing a type of paralysis. For instance, I believe seriously that Federal, State, and local authorities would be willing to commit more funds in the area of manpower if there were a reasonable assurance that more trained health professionals would emerge, that those of us in the academic field recognize the nature and magnitude of the so-called "manpower crisis" and are dedicated to do our part in seeking to correct it.

Few will long be interested in what part of the blame belongs where—defective Federal programs, slow moving professionals, rigid organizational structures, unreasonable demands, and so forth. All will continue to seek solutions—even partial solutions—with varying but increasing urgency.

In viewing today the whole complex of medical science, education, and service in this country, one sees great problems and paradox. The question of relevancy to social need is raised in each of the three areas. But science is indeed relevant to the burning social issues of our times, for the burden of disease and disability can only be lifted ultimately through research. In a growing national climate that is both impatient for change and impatient with the agents for change which have proved to be the surest and swiftest in the long run—science and scholarship—we must at the same time recognize the need for change and the augmented impact which science and education can have under the heightened determination to meet social needs.

I am confident that the desire of people for relief from the burden of illness, or more accurately, the desire for health, and from the high cost of dealing with it, will be correctly interpreted as a need for renewed effort in medical science and education. The fact that medicine stands at the threshold of an Age of Biology is widely appreciated, and the value judgments of our society will assign a high priority to the seizing of research opportunity on behalf of all mankind for all time. Our best tools for the task—indeed, our only tools—are the subject, broadly defined, of our discussion tonight: "NIH and the Academic Life."

THIS VERY WORLD*

Robert Q. Marston, M.D.**

I am delighted to have this opportunity to return to Jackson, Mississippi, where my family and I spent four and a half stimulating and productive years, and where our youngest child was born. I have enjoyed visiting old and dear friends today and discovering once again the basic strength of one of the institutions you pay tribute to tonight: the University Medical Center.

As you can imagine, I am particularly pleased to join with you in paying tribute to the medical and dental professions of the Jackson metropolitan area. And may I add how gratifying it is to be once more at an annual meeting of the Jackson Chamber of Commerce. Chancellor J. D. Williams brought me to my first one, the day the Board of Trustees for Institutions of Higher Learning confirmed my appointment as Dean of the School of Medicine. And I well recall how reassured I was on that important day by the spirit I observed: enthusiasm, pride, talent, aggressive leadership, and a determination to work for the improvement of Jackson.

The health resources of Jackson constitute not only a valued asset to the city, region, and State, but to the Nation. Thus, I have a very

*For delivery before the Jackson Chamber of Commerce, Jackson, Mississippi, November 24, 1969.

**Director, National Institutes of Health, U.S. Department of Health, Education, and Welfare.

special reason for wishing your hospitals, professional groups, and educational institutions every success. After all, the mission of my agency, the National Institutes of Health, in furthering research, education, and biomedical communication depends significantly on the University Medical Center here in Jackson and on institutions like it throughout the Nation. This is evident in the fact that since 1963 NIH has invested more than \$23 million in Mississippi, mostly as a result of national competition for research and education funds.

I have chosen as my theme tonight "This Very World"--words that assuredly come from another age. It was 350 years ago that Francis Bacon said that to examine and dissect the nature of "this very world," we must go to the facts for everything. Today, as then, is a time in the health world to look at the facts themselves: to recognize that policies are meaningful only when linked to performance; hopes and desires powerful when based on the possible; and that in the truly important endeavors of man, short cuts carry greater risks than in less important matters.

Most people talking about the crises in the health-care field readily agree that our goal is optimum health for the American people. There is much debate about how to accomplish this--how to get from here to there. Those who debate the issues seem either to be for the status quo or for revolution; to be either a defender of the profession or a champion of the consumer; a spokesman for the student, the practicing physician, the teacher-scientist, or the Federal Government.

Let me show you how ridiculous this is. For about ten years I was a student in the health field. For another ten years I was a physician with

day-to-day responsibilities for patient care. I find also that I spent about ten years as an Assistant or Associate Professor of Medicine, teaching and serving as an active investigator in infectious diseases. For seven years I was an Assistant Dean or Dean, and for the last five years, I have been a Federal administrator. In the course of my career, I have been associated with three State-supported institutions, two private, and one foreign university. My primary goal and the goal of those I worked with over these years was remarkably consistent: better health! The point I am trying to make here is that we must use wisely all approaches and all resources to solve our problems--and in a cooperative, not a competitive manner.

This is not to say, however, that I am without my prejudices and personal choices. They are expressed in my personal career choices. First, I do think health is important--quite frankly, more important than some, but not all, of the things our Government supports. Second, I have chosen research and education as my area of primary interest because I believe they represent the most critical factors in our quest for better health. So, tonight I shall try to limit my discussion to these aspects of health. Let me assure you, however, that I am not unmindful of the problems of Medicare, Medicaid, comprehensive health planning, hospital construction, or the delivery of improved health services to the public. Not only are they important, but they are significantly affected by medical research and education.

For example, the common problem in each of these areas is the shortage of trained manpower in the health fields. President Nixon, Secretary

Finch, and Assistant Secretary Egeberg have all emphasized the need for more physicians. Present estimates are that we are short 50,000 physicians, 9,000 dentists, and 140,000 nurses. The problem is not just one of number; we must find more effective ways to use less highly trained workers in the allied health fields. The fact is that our physicians and nurses and dentists are badly overworked at present, and that we are importing from less affluent nations graduates of medical schools that fail to meet the standards required of medical schools in this country.

In the foreseeable future, there is no substitute for more nearly adequate numbers of highly trained physicians, dentists and nurses. It is worth noting here that the American Medical Association and the Association of American Medical Colleges last year issued a joint statement calling for sufficient expansion in the medical schools to accommodate all qualified applicants. I support this position.

The first question, then, is the need for greater numbers; the second question is, Who will do the job? Mendall Davis suggested, among other things, that one of the points I might want to touch on tonight relates to this observation on health: "Where Federal and State dollars mix, the taxpayers always win." I agree. Indeed, the Federal Government became involved in the support of medical education largely because of the high mobility of physicians and dentists, plus the high cost of education. In some State-supported institutions, more than 60 percent of the graduates end up practicing in other parts of the country.

The role of the Federal Government in education, in contrast to its dominant role in the support of research, is a limited one. We make

awards of four general types: grants for construction of educational buildings; basic-improvement grants of a formula nature, based on enrollment; special-improvement grants for schools in serious danger of collapse and to increase enrollment and effectiveness of the educational process; and last, student assistance through scholarships and loans.

In general, Federal support has been helpful in making possible new schools and the expansion of old schools. But today many if not all of the medical schools of the country find themselves in the most serious situation they have confronted in this century. They have been caught, along with other parts of the health enterprise, by an explosive demand for services.

Some of this is a direct result of new Federal programs, and some of it stems from the cascading effect of limited manpower and increased demands. On one side, we face student demands, community demands, and escalating costs; on the other side, shrinking endowments, increased resistance from universities to pick up deficits, rapid reduction in Federal funds matched in many instances by a shrinkage in State funds, and last, an acute shortage of faculty. I believe this problem of financial insecurity in the medical schools will be worked out, but it is particularly important at this time that we all recognize the dangers confronting our medical institutions--and thus each of us--and give them our best support.

I should like next to say something about the trained personnel our health professions schools are turning out. Physicians, dentists, nurses, and allied workers face stresses and strains today of great magnitude. They are being asked to do more with less against a rising

tide of criticism. This situation brings to mind an observation by Assistant Secretary Egeberg concerning the kind of crisis we would face if some new monolithic system of health care were introduced, involving reduction of the physician's work week from 70 or 80 hours to 40 hours a week! It is indeed a time to recognize and support the people on the health team--even as we all change, as change we must.

I should like to turn now to the area of biomedical research, touching first on some of the current problems, then exploring the potential ahead for advances in health based on research progress, and finally to emphasize prospects posed by the "age of biology" and leading to better understanding the basic nature of man.

We have experienced two atypical periods of growth in medical research. The first began in the mid 1950s and brought with it a very rapid increase in Federal support of biomedical research, paralleling and even exceeding the support given other sciences in those post-Sputnik years. The key difference in the medical area, however, was that most of the funds went to academic institutions, and particularly to medical schools. Some viewed this as a development which directed physicians away from the practice of medicine and into the laboratory. The facts are that only 5,000 out of more than 300,000 physicians in this country are primarily involved in research, and most of these are also treating patients. Manpower for research and for teaching in the basic medical sciences has come predominately from an increase in the number of Ph.D.s--who, of course, are not qualified to practice medicine. The contributions of medical scientists are not only relevant to the health needs of society

but, all in all, are our only real hope for continued progress in health care.

The second period I have alluded to is also atypical, in that it is characterized by lack of any appreciable growth in financial support since 1967. This is because of the serious budget constraints stemming from inflation and the Vietnam war. Not only has the decrease in Federal funds had a very unsettling effect on academic institutions and their scientists, but perhaps even more important, confidence in the granting agencies has been seriously shaken--so much so, that my number-one priority as the Director of NIH is to try to restore this confidence.

As we look to the future, a growth rate falling between the two extremes I have just cited seems likely.

My second observation concerns the spirit of optimism and excitement that I see in visiting the laboratories at the National Institutes of Health and in observing some of the work being done at places such as the University of Mississippi Medical Center. There is no question that there is more excitement in the biomedical research field than I have ever seen before. The results are sometimes unpredictable. More often, they are the outcome of careful planning and work over the years, including basic research and clinical testing. In the former category, I would only mention the problem of cyclamates and DDT, which were found somewhat unexpectedly to cause cancers or to produce abnormalities in fetuses. We can expect in time more and more results from biomedical research which will have major and often unexpected effects on the way we live. The development of the German measles vaccine and the dramatic

advances in the treatment of Parkinson's disease are examples of careful work, basic and applied, extending over a number of years.

I turn next to my third point about medical research, and that is we really are entering what could be called the Age of Biology. There is great and appropriate excitement in the exploration of space, especially today, and promise of understanding better our ocean frontiers. There is also no doubt in my mind that similarly impressive explorations are now under way about the nature of life--what man is and how he works--which will have a vast influence on our lives and on those of our children.

Let me illustrate. A few days ago, a professor at Rockefeller University described progress in research on enzymes, substances in our body which affect in one way or another every chemical reaction that occurs. There are probably about 2,000 different kinds of enzymes, and we have some detailed knowledge of about a hundred and highly precise knowledge of about six. A year ago a scientist succeeded in actually producing an enzyme in the laboratory. My Rockefeller University professor rather dramatically raised the question of the impact on our lives if by the year 2,000 we knew everything about these 2,000 enzymes and could manipulate them at will.

Most of you are aware of the fantastic developments in recent years involving the genetic nature of our cells which determines not only our essential make-up, including the color of our eyes and susceptibility to some diseases, but also plays a role in the day-to-day body processes of repair and maintenance. Major advances will undoubtedly come from the

highly sophisticated work being conducted on the structure of basic genetic material of life itself. In addition, there are occasions when we gain from the fall-out from development of new techniques. Thus, I am told, we will have within two years an accurate understanding for the first time of all the various influences and events that occur in a woman's reproductive cycle. This information was unobtainable until new techniques for determining minute levels of circulating hormones became available--not from studies on population growth but from attempts to understand endocrine diseases. Such findings emphasize again the implications presented by a better understanding of early life processes as well as new leads in research seeking control of the world's runaway population growth.

In summary, let me reiterate several points. Those of us in the health professions ask only that you who are in other walks of life recognize that our crises are your crises.

I applaud the Chamber of Commerce of Jackson, Mississippi, for choosing this year to salute the health professions of metropolitan Jackson. I repeat, there are no instant answers in this as in other fields. We are deficient in knowledge at a time when opportunities to increase our knowledge have never been greater. We are also deficient in manpower. Ultimately, all of our goals will be dependent on achieving progress in this manpower area, making it possible for educational institutions to increase their output at the very time they are severely shaken by a series of financial and other crises. Let us remember that the achievement of health goals will be dependent on the day-to-day

activities of dedicated men and women in the health professions. It is essential that the contributions be recognized, not just because they deserve recognition for what has always been a pretty tough job, but because the nature of medicine is such that it requires individuals who go beyond the requirements of their jobs. Our needs for dedicated workers in the health field can only be met if the health professions continue to be respected and rewarding careers in the eyes of young people. Thus, I commend the health professions and institutions of Jackson, as well as this Chamber of Commerce for a most timely and appropriate tribute.

NIH AWARDS IN MISSISSIPPI, FY 1963-1969

(in thousands)

Fiscal year	TOTAL	Research grants	Research contracts	Constr. grants	Training grants	Fellowships & traineeships	Research career awards	State control grants	Med. library resources
1963	\$2,582	\$1,752	\$ 5	\$ -	\$ 515	\$165	\$ -	\$145	\$ -
1964	2,563	1,596	-	-	691	132	-	144	-
1965	3,351	1,939	-	493	724	114	-	81	-
1966	3,160	1,964	-	-	929	177	-	90	-
1967	2,893	2,059	31	-	644	107	52	-	-
1968	3,820	2,427	154	-	1,047	74	93	-	25
1969	4,653	2,460	253	303	1,474	52	93	-	18
TOTALS	\$23,022	\$14,197	\$443	\$796	\$6,024	\$821	\$238	\$460	\$43

#624

CHRISTMAS GREETING
R & W SINGALONG
CLINICAL CENTER AUDITORIUM
11:30 A.M., DECEMBER 18, 1969

This Christmas Singalong has become a traditional and a happy occasion here at NIH. It gives an opportunity for all of us to mark the opening of the holiday season with song and friendliness. I am happy to be able to greet you--particularly our patients and our normal volunteers who are essential members of our research team. You willingly submit to tests and treatments so that new ways of treating and preventing disease may be found. When you sometimes grow tired of all the "shots" and the pills and other therapeutics, remember the words of Ecclesiasticus, ~~who said~~:

"The Lord hath made medicines out of the earth and
he that is wise will not abhor them."

I want to thank the NIH Choral Group for the entertainment they are going to provide, and I want, also, to thank R and W for making possible this happy gathering.

It is not often that so many of us at NIH--scientists, patients, administrators, and other workers--come together. You may have heard about the time when the NIH population was small enough so that everyone knew everyone, and gatherings such as this were frequent. We may regret the passing of the so-called good old days, but I think that we all still have feelings of

friendliness and kindness toward our fellow workers, even though we do not know each of them by name. Perhaps this is because, as was noted by Hippocrates, "Wherever the art of medicine is, there also is love of humanity."

I hope that here at NIH we shall always keep that love of humanity.

I have just one more word to say -- No, two more words:

Merry Christmas.

PORTRAIT OF DR. SHANNON*

Robert Q. Marston, M.D.**

The portrait of Dr. Shannon which we unveil today will, we hope, suggest the dimensions of a remarkable man who guided NIH during its most dynamic period of growth--a period which probably witnessed more change than any we can point to in the eight-decade development of NIH from a small insular research agency to one which today exerts major influence on the course of medical research throughout the Nation, and indeed the world.

Because it was a relatively long tenure--13 years--we are able to view it with a fairly clear perspective. Certainly we see much in this turbulent period stretching from 1955 to 1968 which symbolizes extraordinary change--the kind of change which grows out of and reflects the needs of a complex society.

Like the society it serves, medicine has become increasingly complex in our day, and can be served adequately only by a research instrument of commensurate size and sophistication.

To fashion such an instrument and to employ it productively in the service of science and society required the vision that has long identified Dr. Shannon as a distinguished scientist, dedicated physician, and outstanding administrator.

*Presented at the unveiling of Dr. Shannon's portrait, NIH, February 5, 1970.

**Director, National Institutes of Health, U.S. Department of Health, Education, and Welfare.

It hardly seems necessary to catalogue all of the advances and innovative developments that we have witnessed during the period Dr. Shannon directed NIH.

New institutes have been organized to provide stronger focus for such fields as child health, basic research, and the environmental sciences. New programs and new methods of support have been devised to help strengthen our research on a broad scale. And new approaches to problems have been successfully tried in activities such as our Regional Medical Programs, in which our goal has been to bring the fruits of research ever closer to the community and to the hospitals serving it.

The close relationship of NIH to the field of medical education is one that long concerned Dr. Shannon and which ultimately led to recognition of the need for extending NIH responsibilities to this area and to the field of medical communication.

The driving concern behind all these developments was a steadfast belief in excellence as the indispensable factor in raising up a democracy of science and enlisting it in the service of mankind.

In adding Dr. Shannon's portrait to those of his illustrious predecessors, we are expressing our gratitude for the devoted service he gave to NIH and to the Nation it serves.

#633

OUTLOOK FOR NIH SUPPORT OF
MEDICAL EDUCATION AND RESEARCH

Background Information*

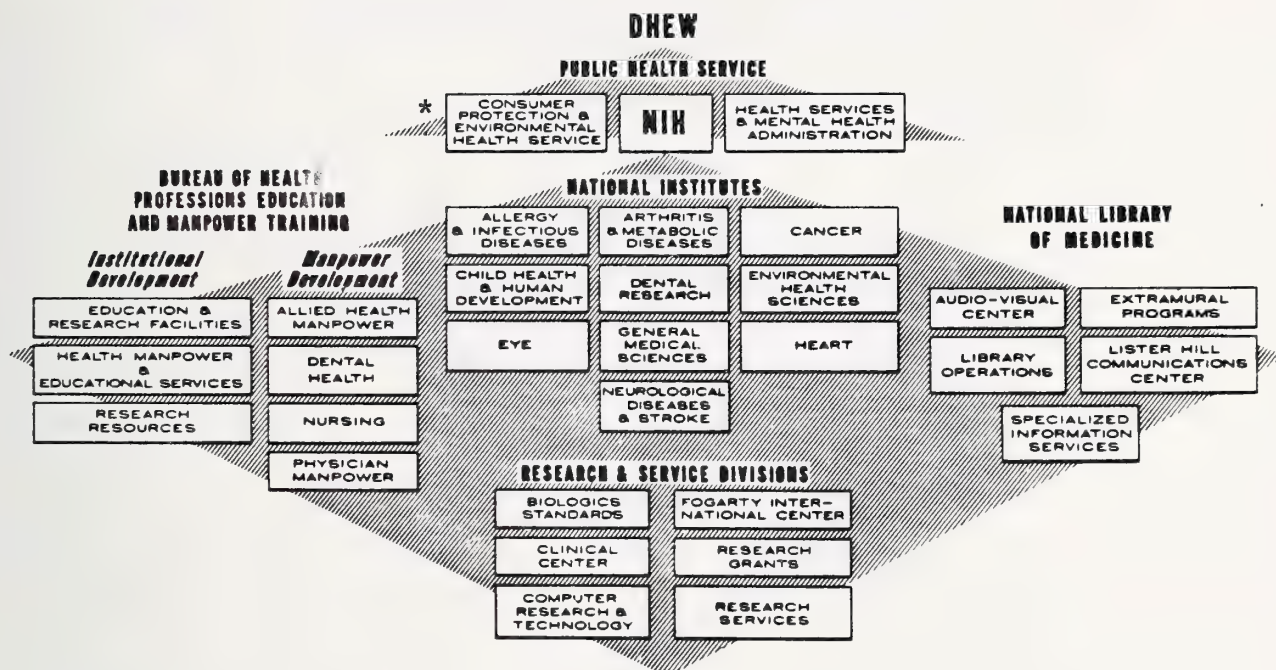
Robert Q. Marston, M. D.**

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*Prepared for Meeting of the Association of American Medical
Colleges, Feb. 6, 1970, Chicago, Illinois.

**Director, National Institutes of Health, U. S. Department of Health,
Education, and Welfare.

I. Organization of the NATIONAL INSTITUTES OF HEALTH



The above chart represents the National Institutes of Health as now organized. A reorganization of the health components of the Department of Health, Education, and Welfare, effective April 1, 1968, resulted in the following changes:

- The Bureau of Health Manpower and the National Library of Medicine were merged with NIH. (BHM was subsequently expanded to include all construction grants and research resources programs of NIH, and was renamed the "Bureau of Health Professions Education and Manpower Training.")
- A Health Services and Mental Health Administration was established to include most other functions previously assigned to the Public Health Service (including the Regional Medical Programs of NIH).
- A Consumer Protection and Environmental Health Service, containing the FDA, was created as the third major component of an expanded and more comprehensive PHS.*
- Direct authority over the new PHS was given to the Assistant Secretary for Health and Scientific Affairs.

*Recently divided into two agencies--the Food and Drug Administration and the Environmental Health Service.

Other organizational changes within NIH include:

- . Consolidation of all construction grant programs in a newly created Division of Educational and Research Facilities in the Bureau of Health Professions Education and Manpower Training.
- . Establishment of the Lister Hill National Center for Biomedical Communications in NLM.
- . Establishment of the National Eye Institute.
- . Elevation of the Division of Environmental Health Sciences to a National Institute.

The top NIH staff is as follows:

Director	Dr. Robert Q. Marston
Deputy Director	Dr. John F. Sherman
Deputy Director for Science	Dr. Robert W. Berliner
Director, Bureau of Health Professions Education and Manpower Training	Dr. Kenneth M. Endicott
Director, National Library of Medicine	Dr. Martin M. Cummings
Associate Director for Health Manpower	Dr. Leonard D. Fenninger
Associate Director for Program Planning and Evaluation	Dr. Thomas J. Kennedy
Associate Director for Administration	Mr. Richard L. Seggel
Associate Director for Extramural Research and Training	Dr. Ronald W. Lamont-Havers
Assistant Director for Collaborative Research	Dr. Leon Jacobs

II. PRESIDENT'S 1971 BUDGET
(Total obligations excluding effect of
advance obligational authority)

In thousands

	1969	Fiscal Year 1971 Budget		
		Fiscal Year 1970*	Fiscal Year 1971	Change from 1970
<u>Institutes & Research Divisions</u>				
Research grants.....	\$555,278	\$527,871	\$546,389	+\$18,518
Training grants & fellowships	196,391	178,522	176,787	-1,735
Direct operations.....	250,868	252,147	312,372	+60,225
Subtotal..	1,002,537	958,540	1,035,548	+77,008
<u>Bureau of Health Professions</u>				
<u>Education & Manpower Training</u>				
Health Manpower:				
Institutional support.....	93,446	128,859	147,966	+19,107
Student assistance**	79,428	81,699	81,591	-108
Other.....	15,469	16,746	18,388	+1,642
Dental Health.....	8,750	10,824	10,954	+130
Research Resources.....	65,009	62,678	63,701	+1,023
Construction of Health Educa- tional Res. & Library Fac.	173,593	149,281	126,100	-23,181
Subtotal..	435,695	450,087	448,700	-1,387
<u>National Library of Medicine</u>				
Grants.....	7,904	6,157	5,792	-365
Direct operations.....	12,433	13,806	13,977	+171
Subtotal..	20,337	19,963	19,769	-194
<u>Buildings and Facilities.....</u>	4,864	4,459	8,399	+3,940
<u>Office of the Director.....</u>	7,318	7,930	8,206	+276
TOTAL..	1,470,751	1,440,979	1,520,622	+79,643

* This reflects reductions directed by the President to combat inflation.
(See explanation on following page.)

** Includes funds obligated under the student loan revolving funds.

III. ADJUSTMENTS IN THE F.Y. 1970 BUDGET

A. Background

The HEW-Labor appropriation bill is at this writing still pending action in Congress. A bill was passed by the Congress but vetoed by the President and the veto was upheld by vote of the House of Representatives.

Agencies of the Department of Health, Education, and Welfare are currently funding their operations under the authority of a "continuing resolution" which limits funds to last year's level, the President's budget, or the current amounts in the appropriation bill, whichever is lower. In actuality, however, they are functioning within limitations set by the President which are generally lower than any of these. These were set last summer under the provisions of Congressional legislation restricting expenditures and by direction of the President to keep expenditures within the limits originally estimated in his F.Y. 1970 budget.

The President's fiscal year 1971 budget has been transmitted to Congress with a "middle year" 1970 column which reflects these approved funding levels for this fiscal year. This might be modified after Congress takes final action on the 1970 appropriations.

The reasons for and nature of the President's actions on the fiscal year 1970 budget to date are explained below.

B. The Problem

Federal outlays (expenditures) must be restrained to combat inflation.

Since the 1970 budget was submitted, the estimate of outlays for the total Federal budget has risen \$3.5 billion.

C. Actions Taken

The Congress placed a ceiling on total Federal outlays in the "Second Supplemental Appropriation Bill, 1969" (Public Law 91-47).

The President has required that action be taken to hold 1970 Federal outlays to the budget estimate of \$192.9 billion.

HEW and other Departments have been required to limit outlays in 1970--under a fixed ceiling established by the Bureau of the Budget.

D. The reductions have been made in 1970 budgeted program levels on the basis of the following:

1. Across-the-board reductions

- a. Reduce new and competing research, demonstration, and services project grants and contracts by 10%.
- b. Reduce the level on non-competing continuations in research, demonstrations and services project grant and contract programs by 5%.
- c. Hold 1970 HEW employment to current level.
- d. Reduce other direct operating costs by 5%.
- e. Reduce obligations for direct construction by 75% (excluding special institutions).

2. Certain selective reductions (not involving NIH).

Special Note: On the average, a reduction of \$1 in outlays requires a cut of \$3 in obligations.

IV. KEY POINTS ON FISCAL YEAR 1971 BUDGET

Research

There is a net overall increase above the budgeted 1970 level of approximately 8% for research, including research resources grants.

Research project grants and direct operations: Major increases above the 1970 level are requested for the following:

- - Cancer, especially viral etiology \$30.0 million
- - Heart and lung disease, especially arteriosclerosis and lung disease 20.0 million
- - Family planning and population research 13.0 million
- - Early childhood development and maternal nutrition 6.5 million
- - Dental research, especially dental caries 5.8 million
- - Other 14.1 million

For the above, research grant funds are increased slightly more than 3 percent, and direct operations, mostly for contracts, by nearly 24 percent (slightly less than half of the contracts go to academic institutions).

Training grants and fellowships: The 1971 budget provides amounts which are slightly below the fiscal year 1970 level, which in turn is about 10 percent below the fiscal year 1969 level. The reduction in extramural training programs for fiscal year 1970--a reduction of \$18 million below the 1969 figure--compels us to look at our training objectives and goals realistically. We are dealing here with two universes: the training of Ph.D.'s for research and the training of clinicians for research and academic medicine through our postdoctoral programs. The reductions in the 1970 budget will require a reduction in the number of trainees and programs. In order to protect the training environment during this period of fiscal constraints, the fellowships program necessarily must absorb a proportionately heavier share of the reduction. With reference to training in the clinical specialties, we are aware of the disparity that has developed between postdoctoral stipends and house resident salaries. We are seeking a solution to this difficult problem.

General research support grants: The 1971 budget proposes that these be cut by 20 percent (from \$57.7 million to \$46.0 million). This reflects the higher priority given to such areas as research in cancer, heart and lung disease, family planning and population, and dental caries.

Research resource grants: The 1971 budget proposes cuts in grants for primate centers and animal resource centers, and other special research resources by \$2 million (from \$24.1 million to \$22.1 million) but provides an increase of \$3 million to meet the increased costs of operating 74 general clinical research centers (19 are being phased out in 1970 because of rising hospital and other costs).

Health Manpower

Excluding carryover funds from the calculation, the 1971 budget provides a net increase of \$25.6 million, or 7.2 percent, for health manpower. The major increases requested are as follows:

- - Project grant support for schools of medicine, dentistry, and osteopathy, including the second year of the special program to augment medical school enrollment by 1,000 students \$14.6 million
- - Project grants for nursing schools 4.0 million
- - Project grants for allied health training 3.3 million

Decreases, based on relative priorities, are as follows:

- - Elimination of basic improvement grants
for schools of veterinary medicine \$2.4 million
- - Reduction in grants for schools of
public health 0.4 million

The budget provides a net increase of \$2.6 million in student assistance. Taking into account offsetting decreases of \$0.6 million in public health traineeships and \$3 million in loans, the increases are distributed as follows: \$2.2 million to allied health traineeships and \$4 million to scholarships, primarily for student nurses. The budget is predicated on the assumption that scholarships and direct loans will go for the most part to students from families with incomes below \$10,000. It is expected that students from higher income families will be able to take advantage of the guaranteed loan program of the Office of Education for support.

The budget estimate for construction on health educational, research, and library facilities shows a reduction of \$23.2 million in total obligational authority. However, this is due to a \$23.2 million carry-over from F.Y. 1969 to F.Y. 1970. The request for new budget authority in F.Y. 1971 is identical with that available in F.Y. 1970. Also, the 1971 budget anticipates the shifting of support of teaching hospitals to a loan guarantee method of financing (with Federal subsidy), freeing an estimated additional \$20 million for grants for the construction of medical and other health professions schools.

Biomedical Communications

The 1971 budget maintains the National Library of Medicine at slightly below the F.Y. 1970 level. It reflects a small increase for the program of grants for regional medical libraries and some decreases in the Library's toxicology information program and the National Medical Audiovisual Center in Atlanta, Georgia.

Buildings and Facilities

The budget reflects an increase in total obligational authority. However, the F.Y. 1971 estimate reflects carryovers from prior years. No new funds are requested for direct construction in F.Y. 1971.

V. NIH POLICY FOR NEGOTIATING REGULAR RESEARCH PROJECT GRANTS

During Fiscal Year 1969, financial restraints required special downward negotiation of non-competing awards for regular research project grants. The objective was to fund as many meritorious projects as possible within the money available. At the time, it was hoped that this downward negotiation practice would not need to be continued beyond that fiscal year. However, the President's Fiscal Year 1970 budget, both as initially submitted last January and as revised last April, assumed continuation of the Fiscal Year 1969 practice through Fiscal Year 1970, and expenditure restrictions established this past summer now require some further reductions.

Under these circumstances, it is believed that the advancement of biomedical research will be best served by supporting as nearly adequately as possible those projects for which awards can be made. This requires assurances of continued support for these projects as close as feasible to the recommended levels. Even though the goal cannot be met during the current fiscal year, the long-range aim will be to negotiate the amount of an individual award to the requirements of the project rather than in relation to a fixed budget ceiling on the total research grant funds available.

The cover: Dr. Robert Quarles Marston, director of NIH, has reason to ponder the federal budget crunch, inflation, and new national priorities. Will essential medical research survive? See page 33.

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MEDICAL VETERINARIAN...
 Dr. Robert Quarles Marston, Director of NIH, has reason to ponder the federal budget crunch, inflation, and new national priorities. Will essential medical research survive? See page 33.



RECEIVED
GOVERNMENT PRINTING OFFICE
1970

*Scheduled for closing
is Indiana University's
research institute,
one of many centers under
the budget ax. Here,
Indiana's Dis. Keith Shefter
(foreground) and C. Conrad
Johnston have been
checking bone calcium
loss in immobilized limbs.*

The telephone-book-size federal budget rolling off the presses of the Government Printing Office hard by the Capitol always spurs a mad grab by politicians and bureaucrats to find out how they and their pet programs will fare in the coming fiscal year. Federal bread is, after all, the staff of life to Washingtonians.

The huge document contains the thousands of line items that fuel a war machine, fight crime, house the needy and feed the poor, as well as listing every pork-barrel, log-rolling project that the servants of the Republic can concoct. And buried deep amid the millions of statistics are the threads of policy molded by the current Administration, one that has not smiled on medical research.

So when President Nixon sends his new budget to Congress this week there probably will be a scramble by the medical research community to the National Institutes of Health to obtain copies. Since hoarding lumps of coal in the toes of their Christmas stockings, they've known that the new budget for fiscal year 1971 will bring no New Year's gifts either. Actually, it has been known for months that the coming budget is

continued

going to be leaner of medical research money than last year's. In fact, every prediction is that the coming budget for medical research will be the smallest in terms of real dollar value in half a decade (see chart).

Stubborn rearguard battles have been fought by the entrenched medical research bureaucracy to obtain support for its cause. The weapons have ranged from statements, actually screams of outrage, by "distinguished scientists," to that marvelous bureaucratic tactic, the "leaked story." The latter usually involves slipping to a trusted journalist friend what might be termed the "see what they're doing to us now" type of information. This gambit has been used many times since last summer when the budget "crunch"—the word in the last Administration was "squeeze"—really began to hurt in the medical research field.

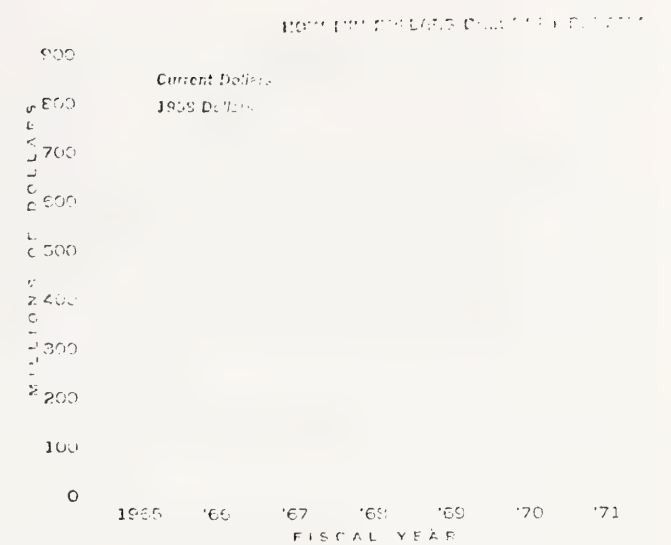
First there was the report that, for lack of funds, the National Cancer Institute would be forced to kill 380 monkeys, costing \$3 a day to maintain, that had received injections five years ago of extracts of human cancer. Several months later the animals were reprieved and sent to four regional primate centers, where they will continue to be housed, fed, and tested at government expense.

Then came the yarn about a 20% across-the-board cut in federal research funds. This one was greeted by howls of protest, talk of "panic in the medical schools," and a "new dark ages of medicine." Then some of the trims were moderated to 10% or even 5%. When three Americans shared the Nobel Prize for medicine it was pointed out that the NIH grants all three were receiving had been reduced by 4% to 15%. Another scientist took umbrage in the *Wall Street Journal* seeking a corporation that might pro-

Victims of the budget cuts... research on trauma, brain ills



Dr. Samuel Powers Jr. checks lungs of patient in doomed Albany research unit.



vide funds for his research center at Jacobi Hospital in the Bronx, N.Y. This was one of the 19 of 93 clinical research centers affiliated with major universities that would face closing for lack of federal funds. The centers included those at the Roswell Park Memorial Institute in Buffalo, a stroke study and research program in Georgia, which has the nation's highest stroke incidence and death rate, and a new diabetes research center in Mississippi.

Then it was learned that about 700 employees have been lost to NIH in the past 18 months because of money shortages. One 20-bed section of the 516-bed Clinical Center has not even opened. Designed for obstetric-gynecologic research under the National Institute of Child Health and Human Development, the unit has never been granted enough money to hire a nursing staff.

And other research beds in clinical centers around the nation are also being phased out as a result of the NIH economy squeeze. The center at Children's Hospital, Los Angeles, has been forced to cut research beds from eight to three, leading to coordinated community protests on a large scale including petitions to President Nixon reported to number 100,000 names.

The research institute at Indiana University Medical Center where measles vaccine is being tested against the fatal subacute sclerosing panencephalitis is among the 19 scheduled for closing. Its director, Dr. C. Conrad Johnston, commented: "We are on the edge of a breakthrough in this and other clinical research that may never be completed if these facilities are reduced or abandoned."

The trauma research unit at Albany Medical College has been cut from eight to four beds, has \$210,000 to operate on until next October 1, but faces a complete shut-down then. And NIH training grants for Ph.D. candidates in the biomedical sciences came down from 6,200 in fiscal 1969 to 5,500 in fiscal 1970.

The National Institute of General Medical Sciences is a major NIH sponsor of grants to train new scientists, many of whom wind up on medical school faculties. "The training programs of the general medical sciences insti-

tute to provide the future experts, teachers, and trainers of the needed health professionals are just now beginning to get off the ground but appear to be progressively underfunded toward rapid extinction," says Dr. J. F. A. McManus, executive director of the Federation of American Societies for Experimental Biology. "This process, if allowed to proceed, would cause irrevocable injury to the whole complex of medical care. Unless we are prepared to have a medical Biafra, a starvation of the health care system, fundings for science must increase."

Research and medical education spokesmen say cutting back on spending for research, even in the face of inflation, is false economy. "Appropriations for education, research, health manpower training, and the delivery of health care cannot be cut without seriously jeopardizing the welfare of the nation," the Ad Hoc Committee on the Nation's Health Crisis told Presidential aides last month in a last-ditch effort to prevent a Presidential veto of the HEW budget for fiscal 1970.

Not everyone in Washington buys that argument. "How much damage one does by holding the line in the research field is a difficult question to answer," says economist Alice Rivlin of the influential Brookings Institution and a former assistant secretary for planning at HEW during the Johnson Administration. "There is some evidence the NIH budget went up too fast, making it difficult to absorb the funds into productive projects." She adds that many involved in the great buildup of NIH say that if they had it to do over again, they would be in favor of a more gradual increase in research funding.

"It doesn't seem to me that research funds can go on increasing at a high rate when other things are being underfunded," she says. "Inflation is inflation." Mrs. Rivlin doesn't see that funds spent for research are any more or less inflationary than funds spent in space or defense.

But supporters of higher budgets for research believe otherwise. Members of the Ad Hoc Committee told President Nixon's advisory board that in the long run an investment in medical research is less inflationary because the people it saves from dying will go on paying taxes. "We conceive of it as an investment in the national future which will pay dividends in later years," said American Heart Association's Dr. Campbell Moses, chairman of the Ad Hoc Committee's steering committee.

Complaints rose to such a crescendo late last year that the Ad Hoc Committee passed the word to NIH leaders to have their people pipe down about the reductions. The evident cause of this off-the-record muzzling was the attribution by veteran Associated Press science writer Frank Carey of some gloomy predictions by Dr. Robert W. Berliner, NIH deputy director for science and an influential executive of the prestigious American Society for Clinical Investigation, and his top assistant, Dr. Carl Leventhal. Carey quoted Dr. Berliner: "I think we are going to have a period of period of stagnation, underfunding, and holding up pretty soon in medical research and the potential is being lost to the world." Dr. Leventhal added: "We could have the dark ages of medical science. We're not there yet—but the potential is there."

The reaction topside at NIH was the customary plaintive wail that the statements had been given as background, off the record, an explanation newsmen Carey flatly denied.

Later, at the American Society of Nephrology meeting, Dr. Berliner spoke on the record. He said: "We have failed to make clear the many inseparable ties between medical research and adequate medical care. We have permitted to go largely unchallenged the nostalgic illusion that somehow things were better in the good old days when the horse-and-buggy general practitioner seemed available to make a house call at just about any time of the day or night."

"Obviously, the discovery of preventive measures is, in the long run, the major answer to medical manpower

Some NIH monkeys get a last-minute reprieve

A group of animals originally scheduled to be killed is readied for shipment from the cancer institute to California.

problems. Such preventive measures will not, however, come simply from good will and sympathy but from better understanding of normal and abnormal biochemistry and physiology and of the pathogenesis of the disorders we would prevent.

"Within health and with health research we have to reconsider our own priorities; we must re-examine the ordering of goals in the light of the discovery that resources are not unlimited. Should we devote resources to trying to develop a cultured heart and then to using it, or will we benefit more people by learning more about the causes and prevention of atherosclerosis? Would it be better to be able within a relatively few years to prolong the lives of 5% or so of those who currently die of heart disease,

continued

or in the more distant future, through research, to postpone the onset of heart disease for, say, ten to 20 years in ten times as many people?"

As *MW* went to press, a spokesman for NIH, queried about rumored increases in research on population control and the virus-cancer relationship and cuts in the artificial heart program, could only say, "Nobody here has any firm handle on which way any of these programs are going. A month ago we were optimistic about some possible increases for 1971 as compared with 1970. Now we tend to have a gloomy outlook."

Standing smack in the middle of the money hassles between the Administration and the anguished medical researchers is Robert Quarles Marston, square-jawed, dapper former researcher and medical school dean, who has directed NIH for the past 17 months. In selecting a new chief for what is certainly one of the world's greatest and most influential institutions for medical and biological research, former HEW Secretary Wilbur J. Cohen picked a man with a record to match that of the institutes he heads.

Dr. Marston, a Virginian who was born on Lincoln's Birthday (he will be 47 this month), was a Rhodes Scholar who studied under Prof. Howard Florey, Nobel Prize winner for penicillin research, at Oxford. He had graduated from the Virginia Military Institute and the Medical College of Virginia. In fast paced order, he interned at Johns Hopkins, took a residency at Vanderbilt University Hospital, attended Oxford, worked at NIH as an Army lieutenant, studying the role of infection after whole-body irradiation, returned to his alma mater for seven years (during which he defected to the University of Minnesota for a year in immunology), and then journeyed south to the University of Mississippi, where in five years he rose to vice chancellor of the medical school.

Lured back to Bethesda four years ago, he took over the Regional Medical Programs which, since his departure, have become almost moribund despite his huge efforts to get them started and supported by private practitioners. Some of the latter view them as yet another federal threat to their freedoms, as do many congressmen. When one high HEW official was asked the other day what ever happened to the "Heart Disease, Cancer and Stroke" treatment package, he sighed and replied: "Congress had its own remedy, castration." Dr. Marston, incidentally, denies that his gray hair (a shade some colleagues have called "distinguished gray") is an outgrowth of his service in government. He says it has had a gray cast for years. For five months he headed the newly created Health Services and Mental Health Administration (which on the federal table of organization is supposedly the bureaucratic equal of NIH) before becoming the ninth administrator of the institutes in September 1968, succeeding Dr. James A. Shannon, who had guided the institutes' path to eminence during his 13 years as their head.

Under Dr. Shannon, NIH had become a model of efficiency and a symbol of excellence in the pursuit of human health through science. Directly or indirectly, the institutes played a part in almost every major medical advance, from

the development of vaccines against many viral diseases to heart transplantation. Under Dr. Shannon the NIH budget was multiplied 15 times and the number of employees rose 250%. It must be noted that at that time Dr. Shannon had powerful support on Capitol Hill from Sen. Lister Hill of Alabama, who has retired, and Rep. John E. Fogarty, who died three years ago. Yet, as Dr. Marston took over as director, money and manpower were becoming increasingly hard to get. There is now, for example, a smaller NIH budget for research and research training grants than there was before Dr. Shannon left and, at the full professor level, 90% of university salaries are higher than their counterparts at the institutes.

Many behind-the-scenes moves surrounded the appointment of Dr. Marston by President Johnson, who termed the NIH directorship "a staggering job." Mrs. Mary Lasker, the health-oriented philanthropist who is a mover and shaker in medical politics, wanted Dr. Michael DeBakey as NIH chief and, using her access to the White House, told the President of her wishes. Mr. Johnson sought the reaction of John W. Gardner, then HEW Secretary. It was cool. After Gardner announced his intention to resign, Mrs. Lasker again visited the White House to intercede for Dr. DeBakey, but the President went along with Gardner. Mr. Johnson may have had reservations about the appointment to a high federal post of yet another fellow Texan.

Dr. Marston took command—he prefers the title director rather than administrator—of a research complex that, despite budget cuts and manpower shortages, is hardly senile, although it is 87 years old. NIH started out in 1890 as a research laboratory at the U.S. Public Health Service's

The NIH administrator won't complain publicly

Dr. Marston reluctantly admits that gray hairs on the head of government service, but his worries are on the rise.

Manhattan's Riker's Island, in New York's harbor. The building's history, as it was then called, moved to the Washington headquarters of the Public Health Service in 1906. Twenty years ago, the small lab was renamed the National Institute of Health. In 1938 it moved to its present campus in Bethesda, across from the Naval Medical Center, along with the newly authorized National Cancer Institute. The complex became the National Institutes of Health with the addition of the National Heart Institute, the National Microbiological Institute, the National Eye Institute, the National Biology and Medicine Institute, and the National Institute of Dental Research.

The function of NIH has been somewhat altered over the past decades. In 1960, it was viewed as the lead organization responsible for generating increased knowledge about disease. It also provided a broad program for producing medical scientists, allotted funds to stabilize institutions with sponsored research, and gave some money for the construction of research facilities. But now there is less concentration of activity at NIH. The large increases in its budget in the mid-1960s were mainly for the initiation and extension of big, centrally organized research programs with specific goals in mind, such as the development of vaccines, vaccines and cancer therapy and artificial heart implantation.

Yet NIH continued to grow. It now has nine institutes, two divisions, one bureau, the Clinical Center, the National Library of Medicine, the Fogarty International Center, and the National Institute of Environmental Health Sciences. Proliferation has been so great as to have caused a crisis. When Congress authorized NIH to set up a Eye Institute 18 months ago it did so over the objections of both Dr. Marston and HEW. The reason given was that research on vision already was being conducted by several of the existing institutes, and that the money could more wisely be spent elsewhere. The affair reached a point where Washington wags were predicting that NIH would soon sprout another appendage, a genital institute. The new trend toward proliferation apparently has been reversed, at least temporarily. One group, known perhaps whimsically as "the friends of the lung," had lobbied for a pulmonary institute. They were headed off at the pass when the heart institute was re-named the National Heart and Lung Institute. Apparently an affair of the heart has less appeal than an affair of the heart.

Despite the Administration's emphasis on population control, HEW Secretary Robert Finch has turned thumbs down on the creation of any birth control institute, or anything like it, for whatever euphemism necessary to appease the conservative critics. Attempts to push an institute devoted to mental retardation also were blocked.

"I want NIH to be interdisciplinary without organization-related infighting," Secretary Finch says. "There are too many scientists who insist you have to have a variety of places in HEW to let the grants out." Mr. Nixon, Mr. Finch, and others are wary of health and scientific programs that might be seen as too broad to want to put under the control of a single agency, let alone the NIH.

and Medicaid increases for delivery of health care and combating the medical manpower "crunch," rather than increasing the research that might not be productive for years. As Secretary Finch put it: "There was a very real danger of NIH becoming extraordinarily expensive."

Another ill omen for NIH, as well as many other research centers, is Mr. Finch's expressed feeling that it is "hypocritical" to support medical education through research grants because, as he puts it, "the research-oriented tend to stay there." The current Administration is vitally concerned with getting more doctors into the cities and the countryside. If research is played down in the coming budget, medical education certainly is not. All predictions are for large increases for the training of medical manpower. Yet in Mr. Finch's quiet way he has done NIH a good turn that has gone unnoticed in most places. He campaigned hard for and won a decision high up in the government that, in effect, insulated biomedical research funds by treating Medicare, Medicaid, and Social Security costs separately. Last year, the costs of Medicare and Medicaid had swollen so grotesquely that \$350 million

IN THE NEXT ISSUE

EXPLORING THE CHEMISTRY OF THOUGHT

Using microsurgical perfusion a scientist at the National Institutes of Health is finding the molecular bases for thought and learning in choline and calcium levels.

had to be pried out of other areas in HEW, including NIH, to feed the monsters.

Says Dr. Marston: "The real impact of the reductions is going to be felt this spring. I expect to hear screams, but I don't think it is the purpose of our research budget to make scientists happy. We have to be productive."

Dr. Marston points out that it is inflation (see chart on page 34) more than grant reductions that is hurting medical research budgets, and adds: "We've got some very tough choices to make. We have to place the highest emphasis on biomedical research, the training of new people, and support for a unique organization apparatus to build on for the future. We also have to maintain the quality of research and keep the best men as well as their laboratories."

"We've known since 1965 that we've been in a tough squeeze on biomedical programs." He adds: "There are going to be great problems." In his country-Southern manner, what Dr. Marston was saying was more bluntly put by the outspoken Dr. Egeberg during a discussion of health priorities and money and the effect of the Administration's policies to hold down federal spending to fight inflation. "I'd like to put the President or get out of the Administration."

Mispower

#629

#629

An opportunity
to review the activities
of N.I.H. - Biophysics
- N.I.H. Expanded
Role
- Basic Research

This is a copy of
the paper on Dr. M.
returned with it.

THE FUTURE OF SCIENCE SUPPORT
BY FEDERAL AGENCIES*

Robert Q. Marston**

I am happy to join you at this annual meeting of the Biophysical Society and to have this opportunity to make a few brief remarks on ~~the future of science support--or to be more precise, Federal support~~ of basic science related to health.

- Yet a
health
agency

As a group, biophysicists have been represented by a separate national society for only a few years. It was in 1957 that scientists working in this field met in Columbus, Ohio, to establish the Biophysical Society to encourage development and dissemination of knowledge in biophysics. Looking back on the thirteen years that have passed since the Society's founding, one is struck by the impressive contributions that the broad discipline you represent has made to the advancement of knowledge.

To a significant degree, the decade of the sixties has been closely identified with a field in which biophysics has played a critical role--the field of molecular biology. Here, in a short period, the genetic code was deciphered and the nucleic acid of an infectious virus was replicated--achievements that command the attention not only of scientists but also of the general public, which is today the principal guarantor of science support.

*For presentation before the Biophysical Society, Baltimore, Maryland, February 26, 1970.

**Director, National Institutes of Health, U.S. Department of Health, Education, and Welfare.

Closely related to the rapid strides made by molecular biologists are those made by physical biologists. A basic tenet of the latter is that structure, including molecular and electronic, must illuminate function. This belief was strikingly evident in the success of Watson and Crick in developing a formal hypothesis for the structure of deoxyribonucleic acid. From this work came the achievements in molecular biology familiar to all of you, deriving from the groups led by Nirenberg, Ochoa, Holley, Khorana and Kornberg, and centered on the genetic code.

There can be little doubt that these advances have encouraged scientists to believe that the state of the art and the prevailing climate favored a sustained effort to obtain answers to long-standing fundamental questions in biology.

The total NIH investment in physical and molecular biology is about \$60 million. This support has enabled scientists to address themselves to fundamental questions in biology which to date have resisted solution. Because of their complexity, these problems require not only the application of concepts and techniques now available, but many new ones in areas outside the traditional biomedical domain. Nevertheless, I think the progress made in the past decade has established a theoretical base for advances directly related to human health.

Turning now to some problems in which NIH and the biophysical science community are involved, we might consider two that are outstanding:

- The growing animosity toward science and technology throughout the Nation,

- The budget constraints under which we have operated since fiscal 1967.

With regard to the first, we have seen that many problems stemming partly from applications of science are being blamed on science itself-- problems ranging from the threat of a nuclear war to the alarming expansion of populations. We hear even medical students asking whether science is "relevant" in a world beset by so many urgent social ills. And we have seen our support ^{level off} dwindle as military, ^{inflation} and other demands ^{of problems compete with} preempt the social missions that are essentially science based.

To these trends I say, as I have before, that man's most effective agent for problem solving is science, basic and applied; that it offers the only ultimate answer to dread and costly diseases and to many other social needs; that the scientific apparatus of this country, the best that has ever been assembled, cannot be dismantled or allowed to deteriorate save to the detriment of all mankind. Presently I will explore briefly some controversial attempts at the Federal level to strengthen science, the outcome of which will be of great moment to basic investigation.

But first I should like to say a few words about the status of the NIH budget, the major source of support for the field of biophysics. In fiscal year 1957 our research budget jumped about 70 percent over the previous year's and continued to climb for a decade, increasing by a factor of six or seven. Since 1967 it has remained nearly static while rising costs have reduced purchasing power. Overall NIH obligations for fiscal 1969 were \$1,489 million, and the regular research grant

portion was \$460 million. In the current fiscal year, total obligations of \$1,406 million are estimated, with a drop in grants to \$436. *As far*
known however these matters are even now under debate

For fiscal 1971, however, the President ^{has} ^{ed} requesting a total budget for NIH of \$1,510 million--an increase of \$21 million over 1969 and \$104 million over 1970. With respect to the regular research grants, the change will be--

- An increase of \$5.3 million over 1970 for noncompeting applications,
- An increase of \$13.7 million for competing applications.

Additional funds are also proposed for the general and categorical clinical research centers and the specialized research center programs. *along to these are some decreases;*
~~These increases would be offset by a 22 percent reduction in funds for~~
 the general research support program. Funds for research fellowships would be slightly reduced, and those for training would remain about the same as in fiscal 1970. This describes very generally the research portions of the budget that has been submitted to Congress--the budget that NIH will defend and the Congress may modify, subject of course to Presidential control. *Sec. Finch & Co. talked against Federal control over the budget*

recognize this as an important improvement over previous years
 Looking now at funds for all R and D across the Federal Government, the proposed 1971 budget of \$15.2 billion is \$400 million lower than that for the current year. On the other hand, medical research will rise from \$1.6 billion to \$1.7. The greatest increases for medical research (exclusive of training) are proposed for DHEW--\$56 million over 1970; and NIH research, included in the DHEW figures, will rise \$107 million to a *20% increase of the base for medical research*
at least that the minimal goal for the next few years will be to maintain current program level

total of \$970 million. DoD's medical research will increase by \$18.5 million. NASA will drop \$7.1 million and NSF \$200,000. There will be a total increase of \$24 million in the medical research of all other agencies. To my knowledge, these figures are the best indicators available from which to estimate future funding in sciences related to health, which draw two-thirds of their support from Federal sources.

It will be obvious from these figures that consistency is not an attribute of Federal science support. While the 1971 budget will approach a reasonable level of funding for medical research, there is no assurance that devastating reductions like those of the current year will not recur, or that future budgets will allow for rising costs, training of new scientists and teachers, and development of facilities.

~~Then~~ there is the question of where basic sciences, such as biophysics, naturally belong in the Federal structure. Should their patron be an agency like NSF, dedicated to science as such, or should it be the mission-oriented agencies like NIH, NASA and AEC? NIH has concerned itself with the development of this field because of its important contributions and potential for health programs. Other agencies have similarly found biophysics to be contributory to their missions. Throughout the Nation last year, about \$162 million was awarded in grants and contracts for studies in biophysics and molecular biology, as reported to Science Information Exchange. \$150 million of this was from the Federal Government, including \$75 million from the Public Health Service, \$25 from the Air Force, \$20 from NASA, \$15 from NSF and \$7 from AEC.

Perhaps it would be useful at this point to summarize briefly how \$60 million in NIH grants was deployed in 1968 over the areas of physical and molecular biology. Here I am speaking only of research-project grants; the data do not include program projects, categorical clinical centers, or support related to research facilities and resources.

As of April 1968, the area of molecular genetics, including nucleic acid synthesis, represented the largest field, accounting for about 30 percent of the total support in terms of number of grants and dollars. The second largest category, comprising the structure of proteins and of nucleic acids, accounted for about 20 percent of the grants and dollars. As you can see, these two broad groups represent about half of the total NIH support in physical and molecular biology. Most of the remaining grants are distributed fairly evenly over studies on the structure of specific proteins, molecular structure in general, and details of catalysis, membranes, and organelles.

The great bulk of the grants--83 percent--are supported by four Institutes at NIH. One of these, the National Institute of General Medical Sciences, supports 44 percent of all NIH grants to physical and molecular biology. The remaining 56 percent have been judged by the Division of Research Grants to be specifically related to the missions of our categorical Institutes.

The problems confronting science, particularly those of budget instability and constraints, have been ^{at length} approached from many angles within ^{fronts} the Federal establishment. One hears from many sources the pros and cons of a central Federal agency for science, versus a strengthened focal

multiple reviews of
point for science policy, versus a continuation of diffuse support.

For example, Representative Daddario's subcommittee held hearings last year on "Centralization of Federal Science Activities." [A report to the subcommittee by the Legislative Reference Service of the Library of Congress [May 29, 1969] states that the issue of centralization is being reexamined "because of the desire to bring better order to the administration of our scientific and technological resources and because of its current resurrection by a number of leaders of the scientific community." Those have included two former Presidents' science advisers, the Chairman of the National Science Board, and the Chairman of the Committee on Science and Public Policy of the National Academy of Sciences. *delete*

Some of the witnesses' views, derived from various sources, are summarized in the report. For example, Dr. Jerome B. Wiesner, provost of MIT and former science advisor to President Kennedy, is quoted as follows:

Given the present antagonisms and the considerable skepticism about the value of continued high-level research and development activities, I have concluded that the only solution is to reorganize and strengthen the Federal mechanisms for planning and supporting research and development.

* * * * *

In the past, those of us who have studied the problems of science policy generally concluded that the more diffuse multi-agency arrangements currently employed serve the nation better than would a single Department of Science, into which were consolidated all Federal research and development activities. I still feel that a single agency with the responsibility for all Federal activities would be a poor arrangement. In fact, I believe it would be a mistake even to concentrate the responsibility for all basic research

Delete whole page

in a single agency. But given the present situation, one which I am certain will persist unless we have another major military confrontation, we must create more effective mechanisms for planning and managing the Government's scientific activities.

Dr. Donald F. Hornig, science advisor to President Johnson, is quoted as saying that we haven't created in this country a constituency for research. This, he suggests, is a task for his successor and the scientific community in general. He says that we must reopen the question of "a large science agency, a U.S. Department of Science." But he adds that it "would be a dreadful mistake to concentrate all of our scientific activity within a single agency."

Dr. Philip Handler, Chairman of NSF's National Science Board and President of the National Academy of Sciences, believes that "the time has come to resurrect the idea of a department of science and consider which components of government should be placed within such an agency."

Dr. Harvey Brooks, Dean of Engineering and Applied Physics, Harvard University, surveys (without endorsing any specific action) the proposals for centralization in his recent book "Government and Science" [pp. 1-18].

Dr. Lee A. DuBridge, science adviser to President Nixon, suggests that the organizational question remains open:

People say sometimes, "shouldn't all the scientific activities of the Government be consolidated into a single office or department?" * * * Since science and engineering are tools for accomplishing missions for many agencies, to say that one agency should do it all, I think, would spoil the impact of science and technology in so many areas where it is and can be important.

I am not saying that the present organization in Government for carrying out research and development is the final one.

delete
Dr. DuBridge has also remarked, "It is not so much the structure of science that needs strengthening as our national commitment to it."

Several other witnesses, including Dr. James A. Shannon, advocate alternatively a new organization for policy coordination.

My own view is that centralization of science, divorcing it from the Federal missions in health, agriculture, space, etc., would probably result in less popular support and lower total funding. It would mean fewer juries for the weighing of new ideas. And it would separate the mission-oriented agencies from their bases in fundamental science, whence they draw the new knowledge and methodology for the conduct of their programs. I believe that whatever steps may be taken to strengthen the coordination of science should not detract from the identity and visibility of the social purposes served or the objective review of non-Federal advisory groups.

I should like now to make a specific point with respect to the support of research. This is to restate my conviction that the key ingredient in the NIH grant programs is the project support system with its peer-judgment review and its commitment of funds in light of the fact that responsible and important research almost always requires more than a year. The project system has proved to be the most effective way to ensure the flow of new knowledge into health-oriented programs. Yet these concepts, I believe, have been severely threatened. This was never

really intended, but came about through the response to what was visualized as a one-shot crisis. Let me review the situation.

During the years of rapid growth of Federal research appropriations, that portion of the research grants budget which constituted the non-competing, continuation "moral commitments" was accepted as a given fact. The discussion focussed on the funds for competing renewals, new grants, and special projects. As we turned the corner into the flat-funding period that started about 1967, various compensatory mechanisms emerged; but still the basic concept of the moral commitment--as a reflection of scientific and professional judgment, and of the need for investigators to be able to predict resources--was maintained, though all knew that the ability to meet these commitments was dependent on year-by-year appropriations.

Last year, serious inflationary factors, the war in Vietnam, and the introduction of a new mechanism for controlling Federal expenditures (required by the Congress but influenced by the Executive Branch) required on short notice a serious reduction in spending across the Government. In the case of NIH, it raised the basic dilemma of whether we would indeed continue to protect entirely the noncompeting continuations and to absorb the entire cut out of competing renewals and new grants.

Largely on the assumption that this was a temporary set of circumstances, and because of the short time available for implementation--and against the background, as you will recall, of a much more serious situation in the National Science Foundation, in which actual, not moral commitments had to be revised downward--a decision was made to try to

stabilize the research enterprise. The number of awards would be maintained by recovering funds from the noncompeting continuation grants. I must say that the scientific community in general agreed with this strategy, and excellent cooperation prevailed between the administrators at NIH and scientists throughout the Nation.

Unfortunately, a continuation of the same factors of inflation and the war in Vietnam made it necessary again this year to absorb an expenditure reduction on short notice. It is not feasible to absorb this total amount from the new and competing renewals, so again we are negotiating downward from the moral commitment level established in the past. In so doing, we have changed the instructions issued last year, when the goal was to maintain the number of grants at the expense of continuing non-competing. This year we realize that we cannot maintain the number of grants, and have set limits on the degree to which noncompeting continuations can be negotiated without specific approval by my office.

In our budget projections for 1971 and subsequent years, I will urge that the primary goal be to move back toward honoring the moral commitment as our first priority. Otherwise, I think it is unlikely that we can maintain the integrity of the peer review system in conditions where, on a year-by-year basis, figures arrived at through scientific and professional judgment are administratively negotiated downward over significant ranges. Moreover, I think it unlikely that research can be conducted productively without anticipation of the resources that will be available in the year ahead. This goal may require two to three years to reach.

The issues raised when budgetary constraints force a mission-oriented agency to narrow its scope and insist upon a higher degree of mission relevance as a precondition for support are indeed complex. In general, the inherent scientific value placed upon a proposal by a peer group, as well as an estimate of proximity to the program goal, determines the decision to fund or not to fund a research-grant application. Here, the more elegant and inherently meritorious a scientific proposal, the better its chance of surviving competition with projects considered more relevant to health missions.

The really important problem, however, is how to deal with groups of grants in fields or disciplines which, as a whole, are on the periphery of a Federal agency's interests. For example, many areas of research in organic chemistry are relevant to the general mission of NIH, subserving the fields of medicinal chemistry, pharmacology-toxicology, biochemistry and molecular biology. On the other hand, when fiscal crunches develop, support for such work may have a lower priority for funding as compared with areas more immediately related to health problems. As a consequence, large blocks of research activity are subject to severely curtailed Federal funding, with reduction of income to academic departments throughout the country.

A logical solution to this set of problems would be for investigators in such fields to seek support from mission-oriented agencies only in unusual circumstances and to accept it only when it constitutes a small and marginal part of their total support. Clearly, NSF must open its doors to these disciplines and try to secure appropriations

large enough to cover high-quality research. To some extent, the magnitude of the problem of funding basic science can be mitigated by heightened attention on the part of all Federal agencies to projects in domains that are properly--even though at the margin of mission relevance--supportable by the Federal Government. It would certainly seem to be in the best interest of all parties to expedite negotiated transfers of high-quality, low-relevance projects from mission-oriented agencies to NSF. NIH is already participating in such an arrangement.

Under way at NIH are several activities designed to minimize the consequences of budget restrictions in a mission-oriented context. Meetings held between NIH and NSF staff, for example, seek to obviate the adverse effect of such restrictions on basic disciplines. These exchanges concern general policy as well as individual projects and fields. Another activity is a study of decisions made within the Institutes which consider general NIH objectives, such as the support of basic biomedical sciences, and the more specific Institute objectives. The study will lend perspective on actions within the discipline-oriented study sections, and will seek to clarify policy in areas of conflict between quality and relevance.

The whole matter of Federal science policy is being debated in many forums. I have discussed several. Another that I might mention in passing is a recent meeting of the Council of Academic Societies serving the Association of American Medical Colleges, which was devoted to the broad question of how to determine appropriate levels of science support. These activities derive from a set of circumstances that might be summarized by way of conclusion.

A general reordering of national priorities is under way; and basic science--even health-related science, important as it may seem to us--must prove its case. We can take nothing for granted. Again; a slowing of growth in the life sciences was inevitable, though one would have hoped for a ^{more} gradual deceleration with allowances for inflation and expanding research opportunities. *We are especially concerned about possibility* A deflection of young people from research careers *which would constitute* and an irreparable loss of momentum are ~~among~~ the tragic consequences. ~~the situation~~ But there are reasons to be optimistic. It should be possible to develop effective mechanisms within the Federal framework--drawing strength from its mission orientation--which will ensure sustained support for the basic research so vital to the attainment of social goals.

7 '71 budget
Age of Biological Revolution
More concern about
damage this year
than last

continued.

- a.) world disarmament,
- b.) environmental pollution control,
- c.) alleviation of poverty, hunger and misery among the socially, economically and politically deprived,
- d.) control on use of crustal resources,
- e.) control of world population.

and

FURTHERMORE, the Biophysical Society strongly urges each of its members to reevaluate each of his or her activities in terms of its priority in relation to the problems in the world, and devote at least twenty percent of his or her effort toward the solution of these.

WHEREAS, the United States in the alleged interest of national security has doubled its military budget three times in the last twenty years;

WHEREAS, the continued and accelerated escalation of nuclear armament, ABM, MIRV, etc. serves only to diminish our security and increase the probability of human extinction;

WHEREAS, the continued growth of industry for destructive, military purposes represents the posture of our national and international policy to protect our foreign investments and continued supply of resources;

WHEREAS, the involvement of universities in military research represents an important political sanction of the Department of Defense and our militaristic domestic and foreign policy;

BE IT RESOLVED THAT, the Biophysical Society

- (1) strongly opposes further support of the Military and its associated industry
- (2) strongly opposes the War in Vietnam and Laos and any future similar wars with imperialistic and counter revolutionary goals
- (3) strongly urges the establishment of national priorities that put constructive programs on top, directed at

The reduction in Federal funds available for maintaining and improving the health of our people is indefensible. It is not true that funds have been diverted from basic to more applied research, or to clinical areas, or to the construction of medical schools and hospitals. In fact the medical problems faced by middle and working class people, their housing conditions, and their schools continue to worsen. But the immense expenditures to support the war in Vietnam and its expansion into Laos continue. A fortune has been spent to construct a military machine whose role is the maintenance of U.S. influence internationally. The needs of the people have been made secondary to this.

Therefore this meeting of the Biophysical Society feels it to be in the interest of the majority of Americans to call for:

- 1) Immediate restoration and expansion of the funds allotted to health related research.
- 2) Immediate restoration and expansion of funds for constructing equipping, and staffing of new medical schools and community hospitals.
- 3) Immediate development of an extensive program for the complete care of the sick and a restoration and expansion of the funds allotted for this purpose. This must be coupled with vast housing and school building programs.
- 4) Immediate withdrawal from Vietnam and other such military involvements to make this program possible.

(1) strongly opposed such a program

associated with

2) support of such a

program

3) support of such a

program

#640

The National Institutes of Health

Yesterday, Today, Tomorrow

Robert Q. Marston, M.D.

**Director, the National Institutes of Health*

한 국 의 과 학 『별 책』

제 2 권 제 3 호 1970 년 3 월

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The National Institutes of Health

Yesterday, Today, Tomorrow

Robert Q. Marston, M.D.*

**Director, the National Institutes of Health*

I am grateful for this opportunity to reach physicians in Korea through the pages of the official *Journal* of the Research Institute of Medical Science of Korea. The Research Institute is, of course, your analog of the United States' National Institutes of Health and our mission has much in common with your own--seeking solutions to the medical problems confronting our citizens in order to improve the health of our people.

The purpose of this article is to acquaint readers of the *Journal* with the role, history and current programs of the National Institutes of Health, the primary health research and education agency of the United States government.

Today, NIH's mission is served through three major programs: the conduct and support of biomedical research, the development of national health manpower resources, and the improvement of biomedical communications systems.

To carry out these functions, NIH is organized into ten research institutes and three research divisions, a Bureau of Health Professions Education and Manpower Training, and the National Library of Medicine. In addition, there is the Clinical Center (research hospital) and the John E. Fogarty International Center.

The programs of the research institutes are designed to obtain new knowledge to combat the major killing and disabling diseases prevalent in the United States today--cancer, heart disease, arthritis, neurological diseases, visual disorders, infectious diseases--and to investigate dental disorders, human development, and environmental health as well as to foster knowledge in the fundamental life sciences.

The institutes award research grants and training grants, in order to maintain a pool of well-trained research scientists. All but one of the institutes also maintains its own laboratory and clinical research program.

NIH has one regulatory responsibility. Its Division of Biologics Standards is concerned with the safety, purity, and potency of vaccines and other biological products sold in interstate commerce or exported. DBS sets standards for the production and testing of these products and licenses commercial manufacturers.

The Bureau of Health Professions Education and Manpower Training awards grants to schools of medicine, dentistry, nursing, and other of the health professions to help them improve the quality of their teaching programs and to increase their capacity for educating highly skilled health personnel. The Bureau also provides funds for the construction and renovation of health teaching facilities and



for loans and scholarships to individual students.

Collecting, organizing, and disseminating biomedical information is the responsibility of the National Library of Medicine. NLM is one of the world's great medical research resources and is viewed as the prototype "library without walls" of the future. Far more than a repository of books and journals, the Library is actively employing technology to make its great resources available to scientists and practitioners across the nation. Its funding of regional medical libraries is helping build a nationwide biomedical communications network.

NIH HISTORY

The tradition of Federal involvement in civilian health research can be traced back to the year 1887 when a small one-room laboratory was established at Staten Island, New York hospital of the U.S. Marine Hospital Service, forerunner of today's Public Health Service.

A Young health officer, Dr. Joseph J. Kinyoun, set up the laboratory for the purpose of detecting carriers of cholera among the hundreds of immigrants then arriving daily in the Port of New York. Kinyoun had studied the new bacteriology in Europe, met the great men of the day--Koch, Ehrlich, Roux, and von Behring--and returned to the United States fired with a determination to make his new knowledge contribute to the improvement of public health in his country.

During Kinyoun's first year at work, he isolated the cholera organism from passengers arriving at New York on two steamships. Following this success, his attention turned to other public health problems, thus setting the pattern for the comprehensive Federally-sponsored research program administered by NIH today.

ACCOMPLISHMENTS

Over the years, the NIH staff has contributed significantly to medical knowledge. Early accomplishments included Dr. Joseph Goldberger's determination that pellagra was a dietary deficiency disease. This discovery opened a whole new field of investigation on the relationship of nutrition to health.

Beginning in 1910, studies in Montana on Rocky Mountain spotted fever, spread by ticks and similar to typhus, led to the development of a vaccine and serum against the dreaded disease of sheep herders and the founding of the worldrenowned NIH Rocky Mountain Laboratory which today is conducting investigations of rickettsial diseases in nature and other infectious disorders.

More recent accomplishments by NIH staff include the identification of the enzyme lacking in the metabolic-error disorder galactosemia by Kalckar, Anderson, and Isselbacher in 1956; the development of a rapid diagnostic test for rheumatoid arthritis by Bozicevich, Freund, and Bunim in 1957; and the proof that monkey malaria can be transmitted to man through the bite of an infected mosquito, reported by Eyles, Coatney, and Getz in 1960.

Perhaps, the outstanding research event of the 1960's--the first step in deciphering the genetic code--was accomplished in an NIH laboratory by Dr. Marshall W. Nirenberg and Heinrich Matthaei in 1961. Dr. Nirenberg received the 1968 Nobel Prize in Physiology or Medicine for this work, the first U.S. government scientist to be so honored.

Another great accomplishment, in the latter part of the 1960's, was the development of the live attenuated rubella virus strain, HPV-77, by Meyer and Parkman of NIH's Division of Biologics.

Standards. This is the strain now being used in the first rubella vaccine which, it is hoped, will prevent a recurrence of the tragic epidemic which struck the United States in 1964-65 causing an estimated 20-30 thousand infants to be born with severe congenital defects.

These and many other achievements of staff scientists have gained NIH its present position of leadership in world biomedical research. Yet, the agency's greatest impact today is made through its various "extramural" programs--grants and awards to non-government institutions and individuals the world over.

RESEARCH GRANTS

The research grant program is the largest of these. Research grants are awarded in the name of individual scientists to universities and other public and non-profit private research organizations to support projects of the scientists' own choosing. The purpose of these grants is to encourage and support research in public health and medicine and in sciences basic to those fields.

In making these awards, NIH depends upon advisory and consultative groups of highly qualified persons drawn from many different specialized fields for review and evaluation of all grant applications.

Initially, a study section (composed primarily of non-Federal specialists in the various health and health-related sciences) reviews each grant proposal to assure that the contemplated research is of scientific importance and that the investigator is competent to carry on the research.

Following this review, the proposal is then examined by an advisory council of the institute or division that will support the application if approved. Such councils, legislatively authorized, are composed of nationally recognized non-government leaders in medical research, medical and allied health practice, health professions education, public affairs as well as representatives of the public itself. On the basis of the recommendations from these councils, awards for support of projects are made to successful applicants.

At present, over 13,000 research grants are in force. They are distributed in each of the fifty United States, two U.S. territories, and abroad in 46 nations, including Korea.

RESEARCH TRAINING

Support of training of research scientists and health professionals is deemed essential to national progress in the improvement of health. NIH has responded to this need by supporting training programs in public and other non-profit scientific institutions for more than two decades to enable them to develop, expand, and improve education in the health-related sciences. With its incorporation of the Bureau of Health Professions Education and Manpower Training in 1968, NIH expanded educational support to include aid to schools and students of the practicing health and allied health professions.

Support is given through training grants to eligible institutions, and traineeship awards, fellowships, scholarships, and loans are made to individuals sponsored by the institution of their choice. Support is also given to scientists of superior potential and capability through a research career program in order to provide them with increased full-time career opportunities.

Other NIH awards are for the construction of health research facilities, teaching facilities for the health professions, and medical libraries. Grants for the development of medical library resources and research animal resources are also provided.

NIH INVESTMENT IN HEALTH

This comprehensive investment in health progress has been particularly fruitful. It has revolutionized the range of diagnostic, therapeutic, and preventive capability available for medical and health services. It has transformed the prognostic expectancy in cancer, heart conditions, cerebrovascular diseases, infectious disorders, and many other areas. Finally, it has opened penetrating insights into the nature of life, the functioning of biological systems, the basic character of disease, degenerative processes, and the conditions of health which provide the basis for the further advance of medical science and practice.

While there is no single qualitative measure on which to base an assessment of the NIH contribution to the advancement of health, it may be fairly said that the agency has played a vital role, directly or indirectly, in virtually every field of medical progress during the past two and a half decades.

From the development of drugs against cancer, through the creation of synthetic viruses in test tubes, to organ transplantation, NIH programs have contributed manpower, money, and/or resources to man's continuing struggle in behalf of better health.

NIH RESEARCH - 1969

An idea of the scope of activities with which NIH is concerned can be gained by glancing at some of the accomplishments of the year past.

Among the achievements of NIH laboratory and clinical research were:

—The successful use of the synthetic interferon inducer poly I:C in treating tumors. Mice which had undergone cancer tissue transplantation were given repeated injections of the chemical. Within 41 days after the slow-growing mouse tumors [were transplanted] there were no survivors among non-injected controls, but all the injected animals were alive, one-third with no signs of cancer two months after treatment had been halted. Clinical trials are now underway at NIH and elsewhere.

—The use of an artificial lung to support life in fetal lambs for up to 2½ days after being placed in a fluid-filled artificial womb. The work may lead to explorations of the potential usefulness of the artificial lung in treating newborn infants suffering from acute respiratory distress.

—The demonstration, in collaboration with academic scientists, that measles virus is associated with a rare brain disorder—subacute sclerosing panencephalitis—that strikes between 100 and 200 adolescents annually and fatally in the United States. This finding marked the first identification of a common virus with a progressive chronic nervous system disorder in humans.

A few of the outstanding accomplishments resulting from the nearly 13,000 research grants administered by NIH were:

—The first synthesis of the gene-regulating enzyme ribonuclease, announced simultaneously by NIH grantees at Rockefeller University and Merck Sharpe & Dohme researchers. This feat may lead to the duplication of other enzymes used by cells and thus a more fundamental understanding of the complex energy processes that govern health and disease.

—The use of detoxified allergens called "allergoids" which promise to be highly useful in alleviating and perhaps preventing the symptoms of allergies. Grantees at Johns Hopkins University speculate that allergoids will greatly enhance the effectiveness of desensitizing injections.

—The deciphering of the complete structure of gamma globulin in an NIH supported study at

Rockefeller University. This milestone along the road to understanding antibody synthesis points the way to improving the immune process or suppressing it to facilitate organ transplants.

MANPOWER - 1969

In the manpower area, an exciting new program was announced in 1969 which is expected to increase enrollment in U.S. schools of medicine and osteopathic medicine by 4,000 over the next four years. Known as the Physician Augmentation Program, the activity supports the addition of 1,000 first-year places in schools of medicine and osteopathic medicine commencing with the fall term of 1970.

During 1969 an estimated \$93.4 million went for support of medical, dental, nursing, public health, allied health, and other health professional schools. Approximately \$62.2 million went for student assistance, including traineeships, scholarships and opportunity grants, and loans.

NATIONAL LIBRARY OF MEDICINE

Last year the National Library of Medicine provided a quarter of a million services to readers and users. Some 127,000 of these were loans in support of medical libraries across the country. Through a computerized retrieval called "Medlars", the Library provided to scientists and physicians throughout the country over 10,000 computer searches of literature. It now shares the retrieval power of Medlars with 11 university-based bibliographic search centers and regional medical libraries constituting a prototype computer service network.

Also using Medlars, the Library has continued to expand its index publication activities, producing over 125,000 pages of Index Medicus, Current Catalog, and 11 specialized indexes in various fields of medicine. Over 20,000 subscriptions to these publications have been sold.

NIH - THE FUTURE

Looking to the future, we have great hope that the 1970's will bring satisfying results from the recent investment of NIH and other government agencies in population control studies.

The National Institute of Child Health and Human Development announced during 1969 the signing of 75 research contracts totaling about \$3 million to explore new methods of contraception and to do behavioral studies related to the world population problem. The goal of the program is an array of new methods that are effective, safe, inexpensive, and suited to the varied needs of different population groups the world over.

I am confident that a multidisciplinary approach to this great problem with its social and economic, as well as medical aspects will enable us to meet what President Nixon has said will be "one of the most serious challenges to human destiny in the last third of this century."

The appropriate allocation of priorities for scarce resources is probably the greatest and most pervasive challenge facing U.S. medical research in the decade to come. It will require a unification of research, educational and informational resources that is unprecedented. We expect that the National Institutes of Health will provide continuing leadership in the great struggle to insure the quality and dignity of human life, through the advancement of knowledge for health.

OUTLOOK FOR NIH SUPPORT OF
MEDICAL EDUCATION AND RESEARCH

Background Information¹

Robert Q. Marston, M.D.² and Robert W. Berliner, M.D.³

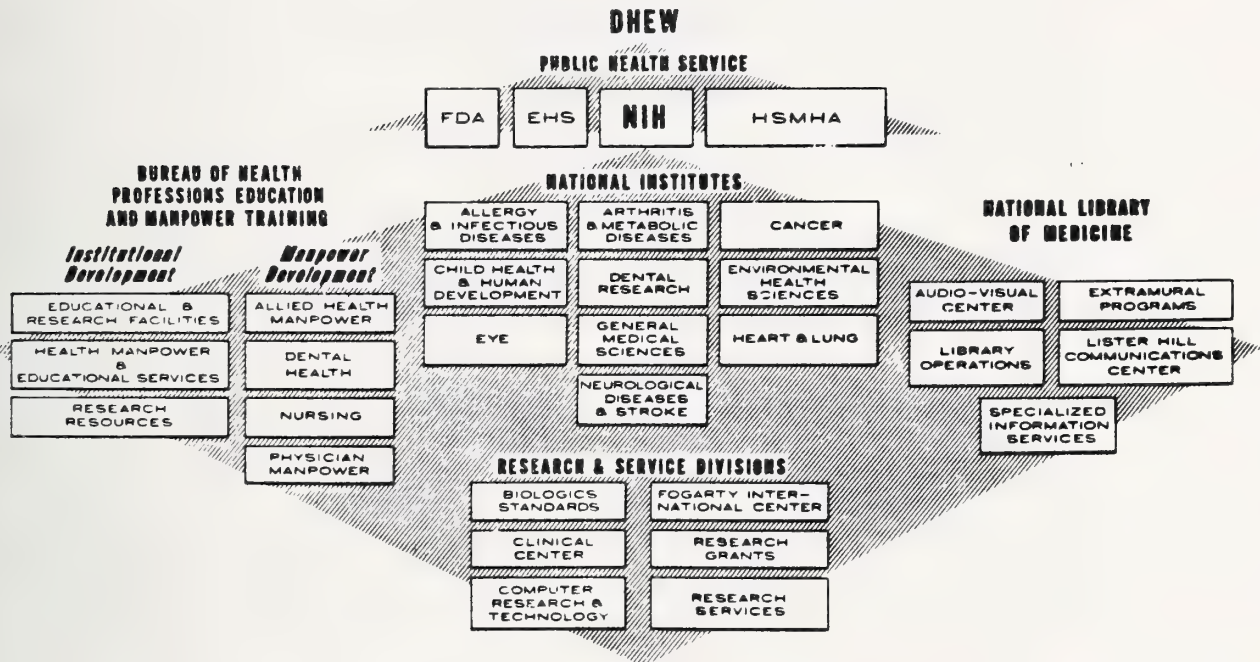
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¹Prepared for 54th Annual Meeting of the Federation of American Societies for Experimental Biology, Atlantic City, N.J., April 11, 1970.

²Director, National Institutes of Health, U.S. Department of Health, Education, and Welfare.

³Deputy Director for Science, NIH, DHEW.

I. ORGANIZATION OF THE NATIONAL INSTITUTES OF HEALTH



The above chart represents the National Institutes of Health as now organized. A reorganization of the health components of the Department of Health, Education, and Welfare, effective April 1, 1968, resulted in the following changes:

- The Bureau of Health Manpower and the National Library of Medicine were merged with NIH. (BHM was subsequently expanded to include all NIH programs of construction grants and research resources, and was renamed the "Bureau of Health Professions Education and Manpower Training.")
- A Health Services and Mental Health Administration was established to include most other functions previously assigned to the Public Health Service (including the Regional Medical Programs of NIH).
- A Consumer Protection and Environmental Health Service, containing the FDA, was created as the third major component of an expanded and more comprehensive PHS. On February 1, 1970, this component was divided into two agencies--the Environmental Health Service and the Food and Drug Administration.
- Direct authority over the new PHS was given to the Assistant Secretary for Health and Scientific Affairs.

Other organizational changes within NIH include:

- Consolidation of all construction grant programs in a newly created Division of Educational and Research Facilities in the Bureau of Health Professions Education and Manpower Training.
- Establishment of the Lister Hill National Center for Biomedical Communications in NLM.
- Establishment of the National Eye Institute.
- Elevation of the Division of Environmental Health Sciences to a National Institute.

The top NIH staff is as follows:

Director	Dr. Robert Q. Marston
Deputy Director	Dr. John F. Sherman
Deputy Director for Science	Dr. Robert W. Berliner
Director, Bureau of Health Professions Education and Manpower Training	Dr. Kenneth M. Endicott
Director, National Library of Medicine	Dr. Martin M. Cummings
Associate Director for Health Manpower	Dr. Leonard D. Fenninger
Associate Director for Program Planning and Evaluation	Dr. Thomas J. Kennedy
Associate Director for Administration	Mr. Richard L. Seggel
Associate Director for Extramural Research and Training	Dr. Ronald W. Lamont-Havers
Assistant Director for Collaborative Research	Dr. Leon Jacobs

II. PRESIDENT'S 1971 BUDGET

Total funds available for obligation, including those carried over from prior years but excluding effect of advance obligational authority

(In thousands)

		Fiscal year 1971 budget		
	1969	Fiscal year 1970*	Fiscal year 1971	Change from 1970
<u>Institutes & Research Divisions</u>				
Research grants.....	\$555,278	\$532,171	\$546,389	+\$14,218
Training grants & fellowships	196,391	178,522	176,787	- 1,735
Direct operations.....	250,868	263,056	312,372	+ 49,316
Subtotal.....	1,002,537	973,749	1,035,548	+ 61,799
<u>Bureau of Health Professions</u>				
<u>Education & Manpower Training</u>				
Health Manpower:				
Institutional support.....	93,466	128,859	147,966	+ 19,107
Student assistance**.....	79,129	74,059	78,963	+ 4,904
(Obl. against new bud. auth.)		(68,956)	(78,963)	(+ 10,007)
Other.. ..	15,470	16,746	18,388	+ 1,642
Dental Health.....	8,750	10,824	10,954	+ 130
Research Resources.....	65,009	62,678	63,701	+ 1,023
Construction of Health Educa-				
tional Res. & Library Fac....	173,593	149,281	126,100	- 23,181
(Obl. against new bud. auth.)		(126,100)	(126,100)	(0)
Subtotal.....	435,397	442,447	446,072	+ 3,625
(Obl. against new bud. auth.)		(414,163)	(446,072)	(+ 31,909)
<u>National Library of Medicine</u>				
Grants.....	7,904	6,157	5,792	- 365
(Obl. against new bud. auth.)		(5,457)	(5,792)	(+ 335)
Direct operations	12,433	13,806	13,977	+ 171
Subtotal.....	20,337	19,963	19,769	- 194
(Obl. against new bud. auth.)		(19,263)	(19,769)	(+ 506)
<u>Building and Facilities</u>				
(Obl. against new bud. auth.)	4,864	6,017	6,656	+ 639
		(1,615)	(0)	(- 1,615)
<u>Office of the Director</u>				
	7,318	7,930	8,206	+ 276
<u>TOTAL NIH</u>				
(Obl. against new bud. auth.)	1,470,453	1,450,106	1,516,251	+ 66,145
		(1,416,720)	(1,509,595)	(+ 92,875)

*Adjusted appropriation; see explanation on following page.

**Includes funds obligated under the student-loan revolving funds.

III. ADJUSTMENTS IN THE FY 1970 BUDGET

A. Background

A compromise HEW-Labor appropriation bill was enacted on March 5, 1970. This action followed a series of events in which the bill was passed by the Congress and vetoed by the President, with the veto later upheld by vote of the House of Representatives.

Prior to final appropriation action, all agencies of the Department of Health, Education, and Welfare operated under the authority of a "continuing resolution" which limited funds to last year's level, the President's budget, or the amounts proposed in the appropriation bill, whichever was lower. In actuality, however, the agencies functioned within limitations set by the President which were generally lower than any of the above. Those limitations were set last summer under the provisions of Congressional legislation restricting expenditures and by direction of the President to keep expenditures within the limits originally estimated in his FY 1970 budget.

The President's fiscal year 1971 budget which was transmitted to Congress on February 2, 1970, contained a "middle year" 1970 column reflecting tentative funding levels for this fiscal year. Subsequently, those "levels" were refined, in material furnished the Committee on Appropriations, to show allocations proposed after the enactment of the NIH appropriations. In the aggregate, these allocations are less than amounts appropriated.

The reasons for and nature of the President's actions on the fiscal year 1970 budget are explained below.

B. The Problem

Federal outlays (expenditures) must be restrained to combat inflation.

Since the 1970 budget was submitted, the estimate of outlays for the total Federal budget has risen \$3.5 billion.

C. Actions Taken

The Congress placed a ceiling on total Federal outlays in the "Second Supplemental Appropriation Bill, 1969" (Public Law 91-47).

The President has required that action be taken to hold 1970 Federal outlays to the budget estimate of \$192.9 billion.

HEW and other Departments have been required to limit outlays in 1970-- under a fixed ceiling established by the Bureau of the Budget.

D. Except as indicated in item E, below, reductions have been made in 1970 budgeted program levels on the basis of the following:

1. Across-the-board reductions

- a. Reduce new and competing research, demonstration, and services project grants and contracts by 10%.
- b. Reduce the level on non-competing continuations in research, demonstrations and services project grant and contract programs by 5%.
- c. Hold 1970 HEW employment to current level.
- d. Reduce other direct operating costs by 5%.
- e. Reduce obligations for direct construction by 75% (excluding special institutions).

2. Certain selective reductions (not involving NIH).

Special Note: On the average, a reduction of \$1 in outlays requires a cut of \$3 in obligations.

- E. Funds initially computed in accordance with the above procedure, and tentatively withheld, have been released to NCI and NHLI in order to accelerate programs receiving special emphasis by those institutes in 1971.

IV. KEY POINTS ON FY 1971 BUDGET

Research

There is a net overall increase above the budgeted 1970 level of approximately 6% for research, including research resources grants.

Research grants and direct operations: Major increases above the 1970 level are requested for the following:

. . . Cancer, especially viral etiology	\$21 million
. . . Heart and lung disease, especially arteriosclerosis and lung disease	10 million
. . . Family planning and population research	13 million
. . . Early childhood development and maternal nutrition	6.5 million
. . . Dental research, especially dental caries	6 million
. . . Other	14 million

For the above, research grant funds are increased about 3 percent, and direct operations (mostly for contracts) by nearly 19 percent (slightly less than half of the contracts go to academic institutions).

Training grants and fellowships: The 1971 budget provides amounts which are slightly below the fiscal year 1970 level, which in turn is about 10 percent below the fiscal year 1969 level. The reduction in extramural training programs for fiscal year 1970--a reduction of \$18 million below the 1969 figure--compels us to look at our training objectives and goals realistically. We are dealing here with two universes: the training of Ph.D.'s for research and the training of clinicians for research and academic medicine through our postdoctoral programs. The reductions in the 1970 budget will require a reduction in the number of trainees and programs. In order to protect the training environment during this period of fiscal constraints, the fellowships program necessarily must absorb a proportionately heavier share of the reduction.

General research support grants: The 1971 budget proposes that these be cut by about 20 percent (from \$50.3 million to \$39.8 million). This reflects the higher priority given to such areas as research in cancer, heart and lung disease, family planning and population, and dental caries.

Research resource grants: The 1971 budget proposes cuts in grants for primate centers and animal resource centers, and other special research resources by \$2 million (from \$24.1 million to \$22.1 million) but provides an increase of \$3 million to meet the increased costs of operating 80 general clinical research centers.

Health Manpower

The 1971 budget provides a net increase of \$2.6 million for health manpower (including carryover funds from prior years but excluding research resources). The major increases requested are as follows:

. . . Project grant support for schools of medicine, dentistry, and osteopathy	\$14.6 million
. . . Project grants for nursing schools	4.0 million
. . . Project grants for allied health training	3.3 million

Decreases, based on relative priorities, are as follows:

. . . Elimination of basic improvement grants for schools of veterinary medicine	\$2.4 million
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. . . Reduction in project grants for graduate public health training	0.4 million
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The budget provides a net increase of \$4.9 million in student assistance. Taking into account offsetting decreases of \$0.6 million in public health traineeships and \$3 million in loans, the increases are distributed as follows: \$2.2 million to allied health traineeships and \$8.0 million to scholarships, primarily for student nurses. The budget is predicated on the assumption that scholarships and direct loans will go for the most part to students from families with incomes below \$10,000. It is expected that students from higher income families will be able to take advantage of the guaranteed loan program of the Office of Education for support.

The budget estimate for construction on health educational, research, and library facilities shows a reduction of \$23.2 million in total obligational authority. However, this is due to a \$23.2 million carry-over from FY 1969 to FY 1970. The request for new budget authority in FY 1971 is identical with that available in FY 1970. Also, the 1971 budget anticipates the shifting of support of teaching hospitals to a loan guarantee method of financing (with Federal subsidy), freeing an estimated additional \$20 million for grants for the construction of medical and other health professions schools.

Biomedical Communications

The 1971 overall budget maintains the National Library of Medicine at slightly below the FY 1970 level. It reflects a program increase for the implementation of Medlars II, decreases in the Library's toxicology information program and the National Medical Audiovisual Center in Atlanta, Georgia.

Buildings and Facilities

The budget reflects an increase in total obligational authority for buildings and facilities. However, the FY 1971 estimate reflects carry-overs from prior years. No new funds are requested for direct construction in FY 1971.

V. NIH POLICY FOR NEGOTIATING REGULAR RESEARCH PROJECT GRANTS

During Fiscal Year 1969, financial restraints required special downward negotiation of noncompeting awards for regular research project grants. The objective was to fund as many meritorious projects as possible within the money available. At the time, it was hoped that this downward negotiation practice would not need to be continued beyond that fiscal year. However, the President's Fiscal Year 1970 budget, both as initially submitted last January and as revised last April, assumed continuation of the FY 1969 practice through FY 1970, and expenditure restrictions established this past summer now require some further reductions.

Under these circumstances, it is believed that the advancement of bio-medical research will be best served by supporting as well as possible those projects for which awards can be made. This requires assurances of continued support for these projects as close as feasible to the recommended levels. Even though the goal cannot be met during the current fiscal year, the long-range aim will be to negotiate the amount of an individual award to the requirements of the project rather than in relation to a fixed budget ceiling on the total research grant funds available.

**VI. FEDERAL BUDGETS FOR MEDICAL R & D, FY 1969-71
(IN MILLIONS)**

Agency	1969 actual	1970 est. oblig.	1971 est. oblig.	Increase 1971/70	Percent increase
Total	\$1,656	\$1,652	\$1,713	\$61	3.7
VA	50	58	59	1	1.7
DoD	118	107	126	19	17.8
AEC	98	98	98	0	0.0
NASA	117	117	110	- 7	- 6.0
NSF	26	26	26	0	0.0
DHEW	1,174	1,157	1,183	26	2.2
NIH	(890)	(872)	(948)	(76)	(8.7)
Agriculture	48	51	53	2	3.9
Other	25	38	58	20	52.6

Note: Covers support of medical and health-related R & D (projects, resources, and general support) but not training or construction.

VII. PROPOSED NEW INSTITUTES--91ST CONGRESS

National Lung Institute (Name of National Heart Institute was changed to National Heart and Lung Institute on Nov. 10, 1969)

H.R. 4822 - Kyros (20 cosponsors)

H.R. 5202 - Kyros (7 cosponsors)

S. 765 - - Yarborough

11 other House bills

National Kidney Institute

H.R. 706 - Whalley

National Institute of Marine Medicine and Pharmacology

S. 1588 - Magnuson (3 cosponsors)

H.R. 1397 - Rogers (20 cosponsors)

2 other House bills

National Institute of Digestive Diseases and Nutrition

H.R. 8978 - Staggers

S. 3063 - - Yarborough

National Institute for Population Research

H.R. 9109 - Brown

National Institute of Gerontology

H.R. 15158 - Springer

National Institute of Biomedical Engineering

S. 1111 - Harris

VIII. PROPOSED TRANSFER OF FUNCTIONS OUT OF NIH

National Center for Population and Family Planning

S. 2108 (Tydings's bill cosponsored by 20 Senators) would bring together in a single new organizational component--the "National Center for Population and Family Planning"--all DHEW programs and activities of research and service concerned with the subject areas.

Senator Tydings on February 19 proposed the establishment of a Family Planning Administration on a par with FDA, NIH, and HSMHA. The Deputy Assistant Secretary for Family Planning and Population would also serve as Director of the new Administration. The Subcommittee reported out S. 2108 on March 11, 1970.

National Kidney Disease Act of 1969

Forty members of the Senate and 113 members of the House cosponsored identical bills (S. 2482, H.R. 12425, and others) to amend the PHS Act by adding a new title, "Title X--Education, Research Training, and Demonstrations in the Field of Kidney Disease."

Research related to kidney disease would be transferred to a new Office of Kidney Diseases, or Kidney-Related Diseases, to be located in the Health Services and Mental Health Administration.

Support of basic biomedical research

ROBERT Q. MARSTON

*National Institutes of Health, U.S. Department of Health,
Education, and Welfare, Bethesda, Maryland*

I HAVE DESCRIBED the National Institutes of Health as a "national biomedical research and educational consortium," to emphasize the fact that NIH differs quite basically from the usual concept of a Federal agency. Thus, my genuine pleasure in appearing before you with Bill McElroy tonight reflects strongly the realization that these Atlantic City meetings, or your campuses and laboratories, are as much a part of what is meant by NIH as the 300-acre installation at Bethesda, Maryland. I say this because we have common cause for sharing a few moments of reflection.

There are times in the lives of each of us when it becomes essential to try to step aside from our current busy roles, and from the immediate problems of our special professions, in order to view candidly and dispassionately the historic significance of our field of endeavor. This is such a time, it seems to me, for those of us who were conditioned and dedicated to the concept—and who still believe—that basic biomedical research is a major foundation for the future progress and even the survival of mankind. Unless we can indeed "see ourselves as others see us," we are not likely to understand the nature of the relatively recent attack on science in general or its decreased support, to which I will speak for biomedical research in particular.

Many factors contributing to these changes are familiar to all of us. Berliner has written recently of the realization of the lack of omnipotence in this country, the need to make choices between desirable goals, the effect of social unrest, and the failure of scientists themselves to interpret effectively the nature of their work.

Weinberg, in a recent article in *Science*, discusses the four fronts from which the attack on science has been launched. First, he says, there are those who view the scientific enterprise as corrupted by political maneuvering among competing claimants for the scientific dollar; second, the thoughtful leaders who see a waning in the relevance of science to the public interest in view of the grave social questions of the day; third, those who urge a slowdown because of the detrimental side-effects of science; and fourth, the "scientific abolitionists" who

challenge human reason as a useful tool for achieving human well-being.

Handler has explored on several occasions a series of problems within government, within science, and within society which have placed science on the defensive; while Cooper, speaking for the AAMC, has documented similar concerns affecting the whole biomedical educational activity.

Thus, it will not be hard for some historian of the future to document the reasons why there was, in the late 20th century, a rather agonizing reexamination of the nature and level of support for biomedical research as this nation became increasingly, and quite appropriately, concerned with the major and even survival-threatening problems of population, environment pollution, racial polarization, education, self-governance itself, and the potential for instant self-destruction.

I would hope that our historian of the future will also find clear documentation that the biomedical scientific community not only welcomed this examination but in fact participated actively in its conduct. Indeed, I should like to spend the next few minutes in outlining some of the areas that need your attention and mine, both for the reasons I have already stated and because I think that, despite the best of motives, the distortions and outright mistakes that are being perpetrated may stand in the way of the very goals we seek in the names of science and humanity.

The first point I wish to make is factual. It should be the starting point of any such discussion, but is seldom mentioned in the climate of today. It is simply this: that the biomedical research endeavors of this nation constitute a ringing success story. One cannot easily exaggerate the importance of the tremendous accomplishment that you at this meeting and our colleagues throughout the nation have made to the welfare of all mankind for all time.

Our future historian will surely note that it was at the precise point of greatest strength and productivity that the forward march in the support of biomedical research was called for an accounting. It was at a time when some spoke of the age of a biological revolution; at a time when the success of biomedical research was held up as a model for such causes as education, the organization and delivery of health services, and the salvaging of the environ-

Presented at the American Society of Biological Chemists' Special Session at the 54th Annual Meeting of the Federation of American Societies for Experimental Biology, Atlantic City, N. J., April 13, 1970.

ment. And perhaps he will understand that it was largely for this reason that some of us became confused or angry or frustrated by what we perceived as at least a failure to take this fact of success into account.

My second general point relates to the question of how seriously we as a nation are prepared to reorder our priorities. Are we really about to launch all-out efforts against major long-range domestic problems throughout the length and breadth of this great nation? For if so, let us proceed with full vigor. Bioscientists will redirect where redirection is needed, change emphasis where change is indicated, mobilize new resources, and play our appropriate role as we have always played it in the achievement of major national objectives. But bioscientists in general are not economists or sociologists, or political scientists or politicians, or labor leaders or representatives of consumer groups. We should be asked to serve primarily in our areas of expertise.

Moreover, there is a type of folly in applying heavy restraints upon a field of demonstrable productivity for its failure to come to grips with issues largely outside its competence, or in having one area working under wartime constraints while the rest of the country enjoys a life-as-usual existence. But there are growing numbers who recognize the need for serious thought, and not just emotional rhetoric, in these matters of priority and appropriate roles.

Now let me turn to four specific thoughts concerning the support of biomedical research in relation to other things. First, there is the relationship of research to immediate social problems. A myth enjoying widespread credence goes something like this: scientists, if they really wanted to, could solve the urgent social problems as easily as they do others, such as the decoding of DNA. If scientists can build an atomic bomb, why can they not use the same approach to cure cancer? This myth rests largely, of course, on a confusion between the nature of the advancement of fundamental knowledge on the one hand, and the nature of complex engineering or technological feats on the other. Part of the problem is a general reluctance to accept the scientist's realistic time scale, which reflects a high degree of unpredictability where basic knowledge is concerned—a view interpreted as arbitrary or indifferent.

Another serious question in regard to the support of science has to do with the general health of academic institutions. It is charged that biomedical science, however productive in its own right, has distorted the nature of universities and particularly of medical schools, to the detriment of their stability and basic functioning. Faculty members involved in research are increasingly viewed as, at best, unresponsive to the urgent needs of their institutions and, at worst, arrogantly flouting or even undercutting their normal administrative channels. They are seen as warping the minds of their students toward the false god of research and thus away from a motivation toward public service.

A third and major charge is that the assumed relationship between the quest for new knowledge and the trans-

TABLE 1. *NIH budget by organizational component, FY 1969–1971, in millions*

NIH Component	1969 Actual	1970 Est. Oblig.	1971 Est. Oblig.	Increase 1971/1970
Total NIH	\$1,471	\$1,450	\$1,516	\$66
Total I/D	1,003	974	1,036	62
NCI	182	181	203	21
NHLI	161	161	172	11
NIDR	30	29	35	6
NIAMD	141	132	132	0
NINDS	104	96	97	1
NIAID	102	98	99	1
NIGMS	160	148	148	0
NICHD	71	75	93	19
NEI	22	24	26	2
NIEHS	18	18	20	2
DBS	8	8	9	1
FIC	4	3	3	0

mission of that knowledge to future generations is false, or at least oversold.

Finally, the relevance of the biomedical research effort to the health of the people is challenged from all sides.

These generally false accusations must not go unchallenged. The fact is that more knowledge, not less, is requisite to improved future health service, to university progress, and to the education of future generations.

However, there are many issues here that cannot be effectively dismissed out of hand or banished by mere denial. Varying judgments are needed, as well as better analyses than we have at present. My office is conducting studies closely related to each of these areas, and the conclusions others reach from such studies could strongly influence the future level and nature of support for basic biomedical science in this country.

Perhaps this will be clearer as I discuss, with the aid of a few tables, some of the issues and decisions involved in the development of the 1971 President's Budget for the National Institutes of Health. At the risk of oversimplification, I will try to relate some of the decisions to my earlier remarks.

Table 1 shows overall NIH budgets and those of the Institutes and research Divisions—first, the 1969 actual obligations, then the funds currently available, and finally the comparable 1971 operating levels based on the President's requests. The 1971 President's Budget would provide a net increase of \$66 million in the operating level for the entire NIH. It also reflects an increase of \$93 million over the adjusted 1970 appropriation. Of this, \$62 million is for the Institutes and research Divisions. This reflects, in part, the clear desire to "reverse the downward trend in the support of research and to maintain the program level—that is, current dollars plus inflation—at a constant level, even during these times of difficult constraints." This is quoted from a widely leaked, but still not officially released, Departmental document.

You will note that the 1971 increase brings us above the 1969 figure, and does contrast with the dip in fiscal 1970. Furthermore, in no Institute is there a decrease.

TABLE 2. *NIH budget by program activities, FY 1969–1971, in millions^a*

Program Activity	1969 Actual	1970 Est. Oblig.	1971 Est. Oblig.	Increase 1971/1970
Total	\$1,471	\$1,450	\$1,516	\$66
Regular research grant program	460	440	455	15
Noncompeting	309	317	322	5
Competing	151	123	133	10
Special research grant programs	161	157	158	1
General research support	53	50	40	–10
Categorical clinical research centers	11	10	11	1
General clinical research centers	35	35	38	3
Specialized research centers	14	14	21	7
Other	48	48	48	0
Collaborative R and D	122	127	167	40
Research training programs	201	183	182	–1
Fellowships	55	47	45	–2
Training grants	146	136	137	1
All other programs	527	541	553	13

^a Columns do not add to totals because of rounding.

Within the distribution, however, we can see the heavy influence of concern with major social problems, such as population (in the child health program), or in the cancer, heart, and dental areas, the perception of scientific opportunities coupled with health problems affecting large numbers of people.

Table 2 shows our projections by budget activities. I call your attention to our regular research grants. Here, we see an increase of \$15 million, or about 3%, in contrast to the decrease of \$20 million last year. The single largest increase in Institute activities is for “collaborative research and development”—\$40 million. The reasons for this decision are complex, but it reflects in part the criticism, by many less familiar than we with the requirements of research, that scientists are prone to focus on science only as an end in itself. This attitude invites a shift to target programs as the surer road to useful new knowledge.

This table also shows the projection as far as training grants are concerned. After the drastic drop of last year, we do anticipate a staying level in fiscal 1971. But this should be viewed as an uneasy truce pending more careful examination of this major program. That there was not a substantial decrease is only attributable to the fear that it would compromise the supply of faculty members needed to expand health manpower for service. We are held responsible for demonstrating the validity of this view, with examining the feasibility of substituting loans for these stipends, and with exploring alternative institutional support mechanisms.

In summary, then, the NIH budget for 1971, which has been presented to the Congress, shows increases of about \$72 million for the research institutes and divisions,

TABLE 3. *Federal budgets for medical R and D, FY 1969–1971, in millions*

Agency	1969 Actual	1970 Est. Oblig.	1971 Est. Oblig.	Increase 1971/1970	Percent Increase
Total	\$1,656	\$1,652	\$1,713	\$61	3.7
VA	50	58	59	1	1.7
DoD	118	107	126	19	17.8
AEC	98	98	98	0	0.0
NASA	117	117	110	–7	–6.0
NSF	26	26	26	0	0.0
DHEW	1,174	1,157	1,183	26	2.2
NIH	(890)	(872)	(948)	(76)	(8.7)
Agriculture	48	51	53	2	3.9
Other	25	38	58	20	52.6

offset by a \$10 million decrease for general research support grants—a net increase of \$62 million.

In the area of health manpower support, the increase is about \$27 million, or 9%. However, we had \$23 million in carryover funds from 1969 to 1970 for health educational and library construction which we will not have next year. The largest increase in the manpower budget—over \$19 million—is for the support of medical, dental, and related institutions. Finally, the budget for the National Library of Medicine remains stable.

Table 3 represents several Federal agencies’ budgets for medical and health-related research in fiscal 1969, 1970, and 1971. Here we see only research and development support: such items as training and construction are not included. Although comparisons across agencies are difficult, the net overall increase of \$61 million for 1971—just under 4%—is comparable with the \$4 million decrease for the current fiscal year. The “Other” category is made up of Interior, State, Transportation, Commerce, and TVA. The increased support of R and D in the medical and health-related fields is to be contrasted with a \$400 million decrease for the overall Federal support of R and D in the President’s 1971 Budget.

I have spoken here primarily about NIH research programs, but the support of basic biomedical science is affected by things outside our immediate domain. As examples, I shall mention two proposals.

First, The Higher Education Opportunity Act of 1970, recently introduced into the Congress. This proposes major changes in federally financed student undergraduate aid. While not concerned directly with graduate education, the Act is an item of interest because of its effect on students coming into our programs and because of the possible extension of some of the philosophy and policy to graduate aid sometime in the future.

My second example is the continued talk of changes in organizational arrangements: a separate department of health, establishment of an advisory group on health to report directly to the President, transfer of all basic science from mission-oriented agencies to a single agency, and several proposals for the establishment of new research institutes.

Each of these and other proposals should of course be considered on its own merits. But I feel increasingly that

such organizational "shuffling of boxes" often serves only to obscure the more substantive and fundamental issues. Such proposals should, at the very least: 1) estimate the probable cost of change; 2) demonstrate convincingly that increased resources to achieve major national goals will indeed result in those goals. Soon after my arrival in Washington, a wise friend cautioned, "Remember, reorganization may be the last resort of the intellectually bankrupt."

Now in summary: as one reviews the support of biomedical research for the immediate future, it is clear that the climate for NIH programs is better today than it was a year ago, and this has been reflected in the 1971 proposed budget. There is continued effort inside and outside of government to find a reasonable basis for the future level of biomedical research support. I strongly urge that in the interim we accept, especially for basic biomedical research, a firm public policy to continue to reverse the downward trend in research support, and to maintain the program level—that is, current dollars plus inflation—even during these times of difficult constraints.

Such a policy would remove much of the uncertainty of recent years which led you and other components of the Federation to focus the attention of the more than 20,000 scientists assembled here on these problems.

There is an inscription on the RCA building in Rockefeller Plaza which says "Knowledge and Wisdom shall be the stability of thy time." The fact that this has been questioned should neither surprise nor discourage us unduly. Throughout the history of man, investment in the future rather than attention to immediate problems has required exceptional leadership, tolerance, foresight, and dedication. These qualities are not lacking among the research community and the friends of biomedical science.

For the future, Knowledge and Wisdom in the area of health are almost totally dependent on the basic biomedical research you conduct. Furthermore, the future real stability of academic institutions, the meaningful education of our youth, and the hope for better health generally can only rest firmly on such Knowledge and Wisdom.

HEALTH MANPOWER NEEDS AND OPPORTUNITIES

= 4650

Robert Q. Munson, M.D.
Director
National Institutes of Health
Bethesda, Md.

Comprehensive health planning allows extensive latitude for innovation within the "art of the possible" in our American system. The Federal Government's sponsorship of comprehensive health planning encourages problem-solving at the local level and promotes cooperation and coordination as major elements of the many health-related programs that are receiving Federal financial support.

It is becoming increasingly apparent that all planning and all services that impinge upon man's health must be coordinated for efficiency and effectiveness. Our limited resources will not permit us the luxury of going our separate ways. All of our efforts should not only mesh, but continuing assessment and subsequent desirable modifications of these efforts should be applied in order to maintain coordination of efforts. Comprehensive health planning should produce master plans that provide a flexible guide to public policy.

To implement the President's announced intention to alleviate the National crisis relating to deficiencies in health services and medical care, attention to the manpower resources and the educational and training process is imperative. Acute shortages of health service manpower -- particularly physicians, dentists, nurses, and allied health personnel -- have become increasingly visible to the general public as the increase in demand for health-care services has exacerbated the effects of these shortages.

* Delivered at the Annual Conference of the State Governors for the Health Planning Agencies, Washington, D.C., April 3, 1973

Unfortunately, long-lead times are needed to effect changes in the numbers of trained health professionals.

The National Institutes of Health anticipates supporting new ideas and methods for educating and training health service personnel so as to both stimulate and respond to the changes in the patterns of delivering health service likely to occur in the 1970's.

In Goals for Americans, published in 1960, Wallace S. Sayre wrote: "One of the most important national goals for the American democracy is the building of a talented, expert, and innovative public service in the National, State, and local governments. It is these public servants who must be relied upon to bring to the political process not only high technical expertise and a sense of continuity but also more than a minor share of the inventiveness, the long-range perspectives, and the conscious explication of those public interests which would not otherwise be emphasized in the public debate which precedes and follows the making of policy decisions. The responsibility for the continuous improvement of the public service rests most clearly and properly upon the elected chief executives, but it is also a task in which every leading institution in our government and society -- legislatures, political parties, interest groups, communications media, and educational systems -- has its own distinctive opportunity and high obligation to contribute."

Comprehensive Health Planning agencies across the Nation, which this audience represents -- are meeting the challenge of needs to determine area health manpower needs and to provide realistic plans for developing and utilizing available manpower resources.

I would like to stress the importance of the intermediate steps between the determination of needs and the development of plans--that is, an analysis of and continuing activities toward building and strengthening health-manpower educational resources -- to provide the facilities and teachers needed to produce the skilled people who deliver health services. This is the essential link -- a bridge -- between supply and demand . In this way, instead of being merely identifiers of public health problems and proposers of solutions, we can stimulate and accelerate solutions to the problem.

Therefore, I urge you to communicate with and help to influence the health manpower educational and training institutions in your respective areas. If none or too few exist, I know you will be thinking of ways to stimulate their establishment. As you know, this is an endeavor in which the Associate Regional Health Directors for Manpower are able to facilitate contacts for you. These Federal representatives possess comprehensive knowledge of educational resources which can help toward the development of plans for new schools within their regions, and they are ready and eager to be of assistance.

The National Institutes of Health through its Bureau of Health Professions Education and Manpower Training is a major source of support to educational institutions that prepare health manpower. Bureau programs support institutions and aid students not only in the fields of medicine, dentistry, nursing, pharmacy, optometry, veterinary medicine, and podiatry; but also allied health occupations and public health. Special emphasis is focused upon preparation of faculty, administrators, and supervisors in all of these fields; so that the schools may expand and improve their programs and so that health planning agencies may be adequately staffed to cope with the seething cauldron of competition in our contemporary world.

In many parts of the Nation, Health Careers Councils are helping to motivate young people and recruit them into health careers, working with professional and service organizations to channel health-care information and guidance counseling into our Nation's secondary schools. The Bureau of Health Professions Education and Manpower Training is actively assisting the National Health Council with ^{these} / efforts through financial and technical support.

Many other agencies, Federal, State and local, are making significant contributions to the development of needed health manpower, and are ready to work with you.

The Cooperative Area Manpower Planning System, well known to you by its acronym, CAMPS, represents six Departments and two independent agencies of the Federal Executive Branch. CAMPS has more than 400 area committees geared to assist you in a coordinative approach for meeting the health manpower needs of individual communities. The development of working relationships on a regular basis between area CAMPS committees and Comprehensive Health Planning agencies continues to be encouraged by all agencies involved. It is hoped that the mutual interests of CAMPS and CHP agencies can stimulate additional proposals for training to meet the ever increasing demands for skilled health manpower in schools and health-care facilities.

Various other programs, such as New Careers and MIDISC -- which will be discussed later in this meeting -- provide funds for health-care training of the unemployed and the underemployed as well as the veteran with health skills.

The quality of medical care in the United States is ^{largely} ~~entirely~~ dependent on the capabilities and numbers of physicians. Demands for medical services that only a physician can provide are currently rising more rapidly than ever before. I am sure you are confronted with these facts every day.

In the health manpower bureau of the National Institutes of Health, extra efforts are being vigorously applied to erase the wide gap between National needs for medical care and the number of physicians needed to provide that care. Schools of medicine have indicated their willingness to join in this effort; and the American Medical Association and the Association of American Medical Colleges have endorsed it by establishing the goal of providing a place for all qualified applicants to medical schools.

Increases in enrollment are being supported by legislation administered by the NIH health manpower bureau through construction grants, development and demonstration of new methods in premedical and medical education, and institutional grants. A brand new effort, however, seeks to establish permanently 1,000 additional first-year places, so that total medical school enrollments will rise stepwise to 4,000 students in 1973-74. This new activity is called the Physician Augmentation Program.

The productivity of dentists, also in short supply, is being enhanced through support of more training programs that will prepare more ~~detailed~~ ^{detail-oriented} auxiliaries. A significant effort supports the instruction of dental students in the principles of "four-handed" dentistry; that is, through efficient utilization of chairside assistants.

Under the provision of Title II of the Health Manpower Act, the Bureau also has a major commitment to support the preparation of the new thousands of registered nurses needed by this Nation.

As we grapple with the task of preparing sufficient numbers of trained health personnel, we become increasingly aware of how dependent the health system is on those professional, technical, and supportive health workers who extend the resources of professional health administrators and practitioners. Bureau funds will enable allied health training centers to acquire needed faculty and equipment, will provide opportunities for allied health personnel to pursue advancing training for the eventual increase of faculty, and will stimulate new teaching methods and development of curricula that will train new types of allied health workers.

¶ The National Institutes of Health is deeply involved in programs for improving the resources through which more and better health manpower is being produced. In this connection, the research programs of NIH are fulfilling several vital functions related both to the education of health professionals and to the delivery of health services.

The programs of the National Institutes of Health are mission-oriented, in the sense that scientific research supported under them is directed at the acquisition of new knowledge not as an end in itself, but primarily as a means and/or a method to solve health problems. Thus, they are directly addressed to improving the health and well-being of the American people; at the understanding of disease processes; and at the exploration of the avenues to control disease through prevention, early diagnosis, and treatment. Solutions, to the extent they emerge from research, have in the past and can be expected in the future to have a profound effect on the health care delivery system.

First and foremost, new knowledge improves, often dramatically, the quality of care, making "treatable" or more easily "treatable" these pathological states whose management formerly left much to be desired. Blue babies, in yesteryear doomed to a short and miserable life with their misery in turn rubbing off in many ways on their families and communities, presently can contemplate a new and hopeful future, including a productive, normal life-span. Hundreds of other examples could be mentioned; including the introduction

tion of new therapeutic agents, new surgical procedures, and new diagnostic techniques. Importantly, many diseases have been virtually eliminated by the discovery and mass application of preventive measures such as virus vaccines; and the toll formerly taken by such diseases has disappeared. The contemporary medical student will probably never see a case of typhoid fever or a polio-crippled child. In other instances, new methods, procedures, and therapeutic agents have considerably simplified disease management and control for patient and physician and have reduced the time, energy, and money required for the treatment of any given patient. Compare, for instance, the problem of management of pulmonary tuberculosis in the 1940's with contemporary techniques. In this sense, research by the discovery of means to eliminate disease and often by the discovery of means to improve the management of disease significantly reduces the actual or expected national bill for health care. This is so not only in dollar terms, but also in the cumulative national toll defined in other human dimensions extracted by disease.

But there are still enormous domains of disease in which health care has little to offer of real value and in which the most elegantly designed and comprehensive "delivery system" has naught to deliver but compassion. Modern medicine is without the knowledge or the tools to prevent and/or ameliorate many congenital or acquired physical or mental handicaps, an enormous amount of acute but especially chronic debilitating and degenerative disease, a tragically large incidence of untimely death, and a vast army of age- and suffering. While the

human costs in pain are beyond knowing, and the indirect economic costs in loss to the GNP incalculable, national expenditures for health were \$53 billion in 1968 and are still rising. While improvements in the organization and delivery of services using the current state of knowledge will indubitably have impact on the toll exacted by disease, any additional major effect will depend on significant scientific advancements to control or modify the disease process.

Although I am now only an interested spectator in the area of community health planning-- your field of expertise-- it seems to me that planning cannot be a closed, static system that is based on incomplete or faulty information regarding a problem as it exists in a frozen moment in time. Planning, it seems to ^{me} consists, first, of a definition of goals and, second, of alternatives for achievement of those goals. Inherent in the term, alternatives, is the moving impact of changes such as rising costs, new information, higher priorities, and so on.

Still under construction is the most important bridge in the world -- the bridge of communication between individuals and institutions, individuals and the various professions, and between individuals and various levels of government, as well as bridges linking each of these, one with another. Bridges of communication must be planned, too. Haphazard contacts and isolated instances of serendipity provide no assurance of comprehensiveness.

None of us knows, however, what particular mechanisms, what particular organizational frameworks, what particular skills, what particular resources are most likely to serve the health needs and the demands for health services of every person in every location in the United States. Nor can we deny our past, shut down the present systems for the provision of health services while we remake all of those systems and re-educate the people who work in them and the people who make use of them. It is essential that we make as good use as possible of the resources that we have at any given moment, that we use some of our resources to improve the present and to prepare for an essentially unknown future in which knowledge and technology will grow, in which organizations will change, and in which demands for health services will increase.

We are experimenting with methods of centralizing resources in some settings and of dispersing them in others. Some of our efforts to bring health services to those who need them follow reasonably well-established patterns and represent attempts to make these patterns more effective. Others depart from the more customary ways of providing care and employ human skills that have not been used in the past to provide health services.

Much of what has happened in the past has occurred without much of a plan and has taken advantage of readily available resources of people and facilities. However, despite the increasing complexity of the services that can be provided, despite the increasing resources that are being provided for health services and for education in the health professions and occupation, and despite the development of new knowledge through research, we are still not able to meet the rising demand for health services of all kinds. This fact has led to a recognition of the necessity to assess the demands for health care and to assess the resources available to cope with these demands.

We have also begun to perceive that the maintenance of health and preservation of the environment require resources of unprecedented magnitude, but we have yet to come to grips with the real dimensions of these aspects of health. We are still concentrating on care and cure rather than prevention and relative well-being.

There is rising pressure to have a much broader segment of the community participate in the planning as well as in the operation of

community services. The process is slow and usually acutely uncomfortable for all the participants, yet it is one that we must deal with despite the difficulties inherent in it. I know of no other means of bringing about the changes in the provision of health services that must take place if we are to make better use of the resources we have and of increasing the resources for the future. In many ways, planning for the organization and provision of health services within a given locality is the most important of all planning, inasmuch as services are used primarily by individuals in the local setting. The degree of responsiveness to the needs of individuals determines the effectiveness of all health care.

Planning for greater geographical areas and for larger numbers of people presents questions and problems that are different from more local planning. It must take into account greater variations and must provide for more possibilities than local planning. It is therefore likely to be more general, and its effectiveness is less immediately tested. Comprehensive health planning is one of the significant experiments now underway; the geopolitical boundaries of the States define the area and the population for which the health-service plans are being made. The problems of relating State to local plans are familiar ones as are the problems of planning for metropolitan areas that do not fit within the boundaries of a single State. Nonetheless, the stimulus through comprehensive health planning to plan services for people in large metropolitan areas has brought people together to examine needs and to devise, hopefully, suitable ways of meeting them.

An equally significant experiment for the provision of health services now in process is to be found in the Regional Medical Programs. Regions are in some cases defined by State boundaries; in others they are defined by groups of States; in still others by areas within States. In some instances the planning group is related to the State government, in others it is not. Many of the programs use as a nucleus the university medical or health center for the planning and as the primary source for the provision of certain essential services. The patterns vary, as indeed they should, because regions and those who inhabit them vary. It seems quite likely that patterns will remain diverse as long as we have a diverse society; and no single plan or no single pattern of organization will prove to be most satisfactory. It is evident that no one answer serves all the requirements of all people; and we should not think in oversimplified terms if we are to be concerned with the well-being of individuals.

There is no paucity of ideas as to how health services are to be improved. There are many different resources, human and material, that are available to us. Scientific knowledge and the technology derived from it permit us to alter disease as never before. The questions arise: How are they being used? Why does performance fall short of plan? Why is there so little reality in many of the things we do? Why are we so impatient with health services?

Part of the difference between expectation and reality is inherent in our very humanity, but there are other factors that can be altered more than our nature. Relationships among health-care institutions have not developed as rapidly as medical knowledge or technology, nor have they changed in tune with the demands for care or the development of resources to pay for care. Most institutions and organizations that provide health services developed independently in response to interest of specific individuals or small groups and have continued to operate independently according to the interests of the individuals who are responsible for them. Prerogatives have often been jealously guarded and territories clearly staked out. The interests of those who are responsible for the operation of the institution have usually been paramount. The organization of institutions has been for the convenience of those who run them, not for the convenience of those who need the services.

The same comment can be made about professional groups -- including specialties within one discipline such as medicine as well as among the other disciplines that are essential in the operation of any health-care institution or agency. The person to be served has had to make practically all the adjustments that have been made in the relationship between the institution and its clientele or the practitioner and the patient.

There are, however, encouraging signs of a decline in institutional and professional parochialism. More students now entering the health professions seem aware of their responsibilities as citizens as well as of the professional responsibilities they are preparing to undertake. Members of the different professions and community leaders are sitting down to discuss the problems that confront us all and are expanding their awareness of the jobs to be done. Nonetheless, our biases, our immediate self-interests, our habits, and our customs sometimes continue to get in the way of doing what we recognize as essential.

Recent legislation has put an enormous stress on all aspects of health services -- to the providers as well as the users. The problems of increasing the quantity, distribution, and utilization of services while maintaining high-quality health care, of which we are capable, demand the utmost in understanding, in patience, and in effort from us all. In our attempts to improve health and health care and in our efforts to gain public support for research and education in the health professions, we have frequently overstated our capabilities and have evoked unrealistic expectations. Although we cannot fulfill them all, we can and should fulfill some of them. At the same time, we should be much more candid about what we can and cannot do. Planning and operations must go hand in hand. Modification of plans and organizations must occur in as orderly a fashion as we can devise.

In our examination of the gaps that now exist in the provision of health care, in our recognition of the deficiencies of present arrangements, we should also recognize that many of these arrangements are good. There

are literally millions of people who benefit each day from care provided for them. As we modify what we do, we should strive to build on our successes, to extend them, and to increase the responsiveness of the organizational framework within which people provide care so that the people needing these services will have access to them and will benefit from using them.

Modifications will continue to have a profound effect on education in all the health occupations; the directions and the rates of change are very significant. We should not be deluded by our search for solutions into abandoning or diluting the scientific base that has produced marked improvement in our ability to prevent illness and to aid those who have become ill. We should build on this base and extend it while recognizing that human beings and the communities in which they live should be the beneficiaries of our knowledge and skill.

There is a good deal of ferment these days regarding geographic and occupational mobility. Even in those areas considered advanced in their efforts in health planning, other obstacles persist in the delivery of adequate health care to the population. These obstacles include licensure and certification procedures, and these require your involvement and reasoning together with professional organizations, examining boards, and State legislatures. The Federal government is acutely interested, because these factors have a significant impact on National goals; but authority for these processes are vested in the States. However, citizens of States are also citizens of the Nation; and we must keep progressing toward the accomplishment of the expectations we have raised -- adequate health care for all of our people.

By enacting Public Laws 89-749 and 90-174, the Congress of the United States has proposed a comprehensive health goal for the Nation and has invested in a planning process that is directed toward attainment of the goal. These laws are both mandates and flexible administrative instruments. As envisioned by the Congress, comprehensive health planning extends laterally across all health activities.

Truly comprehensive health planning is less concerned with targets and more concerned with trends; but ultimately it must be tuned to values -- the changing aspirations of society that require translation into changing goals for health and changing patterns among health-oriented activities. The comprehensive health planner must be a spokesman for health at the highest levels of public policy and a spokesman for public policy in the world of health.

From your vantage point, facing problems with their different kinds of complexities, you are in a unique position to identify not only significant problems, but also ^{pragmatic} ~~pragmatic~~ solutions. I know that I echo the thoughts of all of my health-oriented colleagues at the Federal level of government when I urge you to transmit your concerns to us. I realize that there have been times when you may have felt that your inputs were being overlooked, but I assure you they will not be ignored at NIH. Each of us must continue to chip away at our problems; no one of us possesses a magic wand to dissolve them instantaneously.

As Thomas Carlyle wrote: "Our grand business undoubtedly is not to see what lies dimly at a distance, but to do what lies clearly at hand."

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Statement by Director, National Institutes of Health
on
1971 Appropriation Estimates

Mr. Chairman and Members of the Committee:

I am pleased to have the opportunity to appear before you again to testify about the goals, plans and needs of NIH for carrying out its responsibilities for Federal support of biomedical research, for education in the health professions and for biomedical communications.

During the past year there have been a number of important changes in the top level staff at NIH.

- . . . Dr. Leonard Fenninger, who testified last year as Director of the Bureau of Health Professions Education and Manpower Training, has become Associate Director for Health Manpower which is a new position in the Office of the Director, NIH.
- . . . He has been succeeded as Director of the Bureau by Dr. Kenneth Endicott who has been Director of the National Cancer Institute since 1960.
- . . . Dr. Thomas Chalmers, who was Assistant Chief Medical Director for Research and Education at the Veterans Administration, has joined NIH as Associate Director for Clinical Care Administration and as the Director of the Clinical Center.

We are now interviewing candidates for the position of Director of the Cancer Institute, and also for Director of the National Institute of General Medical Sciences to succeed Dr. Frederick Stone who has resigned in order to become president of New York Medical College.

Dr. Carl Kupfer, who was chairman of the Ophthalmology Department at the University of Washington, is on board as Director of the new National Eye Institute which is now in full operation. The creation of the Eye Institute paves the way for greater emphasis on research on the prevention, treatment and cure of eye diseases and visual disorders.

Another area to which NIH is giving increased attention is research on diseases of the lung. We have brought together, for coordinated program direction in the National Heart Institute, various research programs on respiratory problems heretofore supported by other Institutes and we have changed the name of the Heart Institute to the National Heart and Lung Institute. This is not a piece of window dressing but a recognition of the fact that the responsibility of the Institute has been broadened in response to a growing national health problem and the emergence of scientific opportunities for productive research on lung diseases.

Frankly, Mr. Chairman, we would much rather expand the role of an existing Institute than create a new one to meet new needs and opportunities. The missions of the ten existing Institutes, as defined in their enabling legislation, cover the full spectrum of disease and biomedical research

problems. The organizational framework therefore already exists for accelerating work on any disease problem or in any area of special scientific concern. In a time of many urgent competing demands for public funds, more can be accomplished if such additional funds as are available can be devoted directly to program objectives. The proliferation of Institutes is not only wasteful of resources--both in terms of staff and money--but it encourages a narrowness of focus that is not in the long-term interest of research on the interrelated problems of human disease.

The organization of NIH is already rather complex. As its activities are funded through 21 items in the bill, I should like to submit for the Committee's use--and for the record--an organization chart which has been specially prepared for these hearings. It shows

- . . . the relationships of the various Institutes and Divisions to the functions of NIH;
- . . . which Institutes and Divisions have separate appropriations and the amount requested for each in the budget; and
- . . . the name of the witness who will testify for each of these appropriation requests.

Before commenting on specific budget items, I should like to take a broad look at the responsibilities and programs of NIH. As you are well aware, the rapidly rising public demand for the readier availability, easier accessibility, higher quality, and lower cost of health services of all kinds requires the rapid expansion of the national pool of suitably

trained manpower. NIH has a major role in Federal support for the development of health manpower. It is one of our most difficult and most challenging tasks.

The institutions in which health manpower must be trained are plagued by a number of unsettling problems. They are faced with

- . . . rapidly increasing costs, especially in teaching hospitals,
- . . . competition for scarce faculty,
- . . . restless students,
- . . . public demands for greater community services, and
- . . . unpredictable income from patients, insurance, and local, state and Federal governments.

All these factors militate against their willingness--and their ability--to expand their teaching activities or to experiment with new curricula and methods.

Despite these difficulties, there has been some heartening progress since the Health Professions Educational Assistance Act was passed in 1963. The number of students admitted to medical schools has increased by nearly 20% and reached almost 11,000 last September. The number of registered nurses in practice has increased by nearly 10% during the past three years. The construction programs have helped to build 12 new medical schools, 34 new schools of nursing, 6 new dental schools, 1 new school of public health and 2 new allied health training centers. Assistance has been given to 32 medical schools in serious financial straits. This year, scholarships have been given to 8,500 nursing students with serious financial need, representing 8% of total nursing school enrollments. More than 3,000 of these students come from

families making less than \$5,000 a year. However, much more encouraging than these initial gains is the fact that all those engaged in training of health manpower are dedicated to the improvement of the health of the American people, that they recognize the national needs, and that they are confident these needs can be met.

The relationship of the NIH research programs to meeting these national needs requires some comment because it is often misunderstood. I commented briefly last year on the criticism that support for research has unbalanced the academic community and detracted from the performance of its educational function. I said then that the imbalance in the academic community is not due to too much research support but to the unfortunate fact that, until recently, this has been the sole kind of Federal support available. The clear and urgent need for comparable educational support is certainly not a consequence of the existence of research support. On the contrary, the need for educational support would have been acutely felt much earlier and would be even greater now if it were not for the existence of quite substantial research support.

The availability of Federal support for research during the past decade has had a tremendous and very healthy effect on the medical schools of this country. Substantial Federal funding of research made it possible to attract to their faculties highly competent physicians and scientists who derived much of their income from research but who were then, for a small investment of the schools' own funds, also available for teaching. This not only made it possible to increase the number of faculty members, despite small and static educational

funds, but it broadened the range of expertise of the faculty and, thereby, greatly enhanced the quality of the instruction provided. A notable feature of the development of medical schools during the past decade is the sharp increase in the proportion of full-time faculty which was largely made possible by the availability of research support. The influx of biomedical investigators into the medical schools on a full-time basis has, incidentally, also had a similar effect on the quality and the scope of the medical services rendered by the medical schools.

The deep involvement of medical schools in research is neither accidental nor ill-advised. Through the joint action of the Congress and the Executive Branch--in which this committee played a very prominent part--this country chose academic institutions as the principal place where research should be done. In most countries it is mainly done in quite separate research institutions. An incidental effect of this country's decision was to change--I should say, lift--the face of education in biology and medicine. Moreover, we chose to support research mainly through individual project grants, awarded on the basis of the individual merit of the applicant and his proposal through a widely praised review system relying on the scientific judgment of the applicant's peers and on the judgment of prestigious Advisory Councils concerning the proposal's relevance to the achievement of national research goals.

Most importantly, it should be recognized that the purpose of research support--and of the appropriations which make it possible--is to stimulate the search for knowledge and for the better treatment of disease. It was never intended to produce more doctors, dentists, or

nurses, or to provide a general subsidy for medical schools or other academic institutions. That it has resulted in the training of better physicians is, however, a secondary effect which should not be lightly discounted.

The heavy investment in biomedical research during the past decade has had a predictable result: The U. S. is now the acknowledged leader in this field of human endeavor. A significant relaxation of our efforts will, of course, have an equally predictable result. The direct and personal benefits which the people of this country have derived from this leadership are difficult to describe in simple terms. In fact, the practice of medicine has been revolutionized during the past twenty years as a direct result of research. Yet the unsolved problems of disease are so numerous and tragic that even the most notable advances seem disappointing in comparison. For example, the recent statement by Dr. Proctor Harvey, the president of the American Heart Association, that the death rate due to diseases of the heart and blood vessels among Americans under 65 is 20% lower today than in 1950 and that improved diagnosis and treatment has saved 51,000 lives since 1950 is overshadowed by the fact that cardiovascular disease nevertheless continues to be responsible for 54% of all deaths.

The Institute Directors will report to you in more detail on the achievements and the problems in their respective fields.

The fight against disease is a long, hard road. Quick victories cannot be expected. The investment in biomedical research must necessarily be a long-term investment. If we set our sights mainly on solutions that can be achieved in a year or two, we shall be frittering

away our efforts and our resources on the easy edges of the hard-core problems of disease. A coat of paint can quickly make the house look better but it will never get rid of the termites.

The contribution of research training grants and fellowships to the health-manpower and health-service problems is even more direct than that of research grants. The primary purpose of postdoctoral training grants and fellowships is to maintain the momentum of research by training young investigators but they also play an important role in the training of medical specialists. At the postdoctoral level, research and education are truly intertwined. A knowledge of research methods is as essential to a medical educator as riding to a cowboy. While training grant and fellowship support have produced much of the medical school faculty, their output has fallen short of present requirements and is very far short of future requirements. The shortage of U.S.-trained faculty is evident from a recent survey by the Association of American Medical Colleges which shows that nearly 18% of the MDs on the faculty of U. S. medical schools--2,295 out of 12,867--are foreign-trained. The percentage for PhDs is considerably lower: 10%--or 666 out of 6,436--are foreign-trained. Overall, one medical school faculty member out of six received his training abroad. The AAMC points out that the equivalent of 10 medical schools are staffed by foreign-trained faculty.

The inadequacy of our physician-training efforts is illustrated by the fact that our dependence on foreign medical graduates to provide patient care has steadily increased. At the present time, one-sixth of

all physicians practicing in the United States are graduates of foreign medical schools. There are nearly 50,000 foreign medical graduates over 90% of whom are providing patient care. They make up 25% of the interns and 32% of the residents in our hospitals. In hospitals not affiliated with medical schools, there are two foreign medical graduates for every three interns graduated from U. S. schools.

Since I appeared before you last year, we have launched the Physician Augmentation Program of which you were informed after the completion of the hearings. Under this program, an additional 500 first-year places will be provided in 29 schools starting with the 1970-1971 academic year. Over the next four years, the enrollment of these 29 schools will therefore have been increased by 2,000 students.

Dr. Endicott will report to you on the status of the health manpower programs--all of which show some progress but in none of which enough is yet being done.

One area to which, I believe, we should give much more attention is the training of what, for want of a better name, is frequently called allied health manpower. Many tasks in the health care field, ranging from the cleaning of teeth to the normal delivery of babies, can be competently performed by people with far less training than a full-fledged dentist or physician.

There are compelling reasons for giving serious consideration to a radical modification of our health-care system in this direction if we are to close the gap between needed health services and available manpower in a reasonable length of time and at a feasible cost.

The budget request for health manpower activities show an increase of \$31.7 million. The major increases requested are: ,

- . . . \$14.6 million for project grant support for schools of medicine, dentistry, and osteopathy;
- . . . \$4.0 million for project grants for nursing schools;
- . . . \$3.3 million for project grants for allied health training.

On the basis of their relative priority, basic improvement grants for schools of veterinary medicine have been eliminated (a reduction of \$2.7 million) and funds for project grants for graduate public health training have been reduced by \$400,000. The net increase for institutional support is thus \$19.1 million.

For student assistance, there is a net increase of \$7.9 million. This includes an increase of \$9.8 million for nursing scholarships and \$2.2 million for allied health traineeships. The major offsetting reduction is a decrease of \$3 million in the request for student loans in the health professions. The budget is predicated on the assumption that scholarships and direct loans will go for the most part to students from families with incomes below \$10,000. It is expected that students from higher income families will be able to take advantage of the guaranteed loan program of the Office of Education for support or to secure private loans.

The budget request for the construction of health educational, research and library facilities is \$126.1 million, the same amount as last year. It is entirely for educational facilities, as was also the case last year.

I reported to you last year that the relationship of the activities of the Division of Dental Health, in the Manpower Bureau, to those of the National Institute of Dental Research was being reviewed. This matter has been thoroughly discussed and a number of alternative proposals have been considered. No final decision has yet been made because the organization of all the health manpower functions of the Department is now being reviewed and a decision affecting the Division of Dental Health will have to be made within the framework of the broader health manpower structure. I understand, however, that the Department expects to be able to report to you on this matter before the end of this fiscal year.

I am pleased to be able to report that the 1971 budget estimates for research reverse the downward trend of the past two years. There is a net overall increase of \$61.8 million--or just over 6%--in the budget request for the Institutes and Research Divisions. The increases are for specific programs which will be discussed in detail by the Institute Directors concerned.

The reduction in the level of research support due to the imposition of expenditure controls, by the Congress and the Bureau of the Budget, on top of the already tight budgets for fiscal years 1969 and 1970, is now having a delayed impact on the biomedical research community. We have abandoned our 1969 policy of trying to support as many project as possible with the funds available by renegotiating the amount of awards for existing grants. Successive renegotiations would quickly have reduced support to a level at which effective research was no longer possible. We believe that

better progress will be made by adequately supporting the projects for which awards are made than by inadequately supporting a larger number.

As you know, increased costs have also forced us to phase-out 10 of the 93 general clinical research centers.

The increase of \$61.8 million for the research Institutes in this year's budget results from the following major increases

- . . . \$22 million for research on cancer, especially the role of viruses;
- . . . \$12 million for heart and lung disease, especially arteriosclerosis and lung disease;
- . . . \$13 million for family planning and population research;
- . . . \$6.5 million for early childhood development and maternal nutrition;
- . . . \$6 million for dental research, especially dental caries, and
- . . . \$10 million for other important research areas.

Partially to offset the cost of increased research in these high priority areas, there is a reduction of \$10.5 million--or about 20%--in the funds allocated to general research support grants. This represents an accommodation to fiscal necessities. We continue to regard this program as an extremely important component in the array of mechanisms for the support of biomedical research. Its objectives are

- . . . to strengthen the research programs of the institutions;
- . . . to encourage the recognition and support of emerging talent;
- . . . to create central institutional research resources;
- . . . to compensate for institutional program unbalances created by a national system of fund allocation oriented to disease categories;
- . . . to stabilize, at least to a modest extent, the support of research-oriented faculty members during periods of otherwise unstable research funding.

A recently completed study of the program indicates that it has succeeded remarkably well in attaining its objectives, and that in so doing, it has advanced the Nation's research efforts significantly.

The restoration of Stone House, which is a permanent part of the facilities for the John E. Fogarty International Center for Advanced Studies in the Health Sciences, has been completed. The building is now in use. The first of the Fogarty Center's conference series was held there earlier this month and the first four scholars-in-residence have arrived. Plans for the new building were somewhat delayed by an argument with the Fine Arts Commission but are now expected to be completed in December.

The appropriation for the current fiscal year includes planning funds for the construction of a building for the Lister Hill National Center for Biomedical Communications of the National Library of Medicine. Biomedical communication is the indispensable link between those engaged in research, education and health service. The National Library of

Medicine has long since outgrown the static role of a repository of information and now plays a vital part in the creation of a versatile and responsive national communications system. The budget request for NLM includes a small increase of \$506,000.

The total budget request for NIH is \$1,509,595,000. This is an increase of \$92.9 million--or 6.6%--over the FY 1970 operating level, excluding funds carried over.

Last year, Mr. Chairman, I expressed the hope that circumstances this year would permit resumption of a more vigorous pace for the health programs for which NIH is responsible. I am glad that this hope was justified, at least in part. The budget requests now before you provide for significant increases in a number of important manpower and research programs. It is true that other programs are still at a rather Spartan 'maintenance' level. Overall, however, this budget will assure continued progress in attaining the two prerequisites for improving the health of the American people: better knowledge of the cause and cure of disease and adequately trained people to apply it.

#627

APRIL 21
Dr. Robert Q. Marston
Director of the National Institutes of Health

Thank you very much. Let me first give you a belated welcome to the NIH campus. I understand you had a pleasant and useful visit to the Library of Medicine earlier today.

I almost started by saying, "Mr. Chairman and members of the committee," because until about an hour ago I was scheduled to appear before the House Appropriations Committee on health, and this was put off until tomorrow morning. So in some ways I'm over-prepared to talk with you; I have three speeches plus my opening statement.

I've decided to get around this dilemma in part by handing out to those who want them a copy of a fact sheet which we made available last week to organizations at the ^{*}federation meetings in Atlantic City. It represents probably our most up-to-date analysis of the 1971 budget; it gives an outline of the organization of the National Institutes of Health, including some of the names of the key people; it talks about some of the policy issues, particularly the non-competing, continuing grants; it gives some background data on proposed new institutes we introduced in the 91st Congress; and it speaks generally about some ~~of the~~ proposed organizational changes; ^{and it gives} ~~as well as giving one~~ table on the federal budget for medical research and development for fiscal years '69 through '71. I won't repeat the things that are in this particular document unless they come up in questions, ~~discussion~~.

brief

What I would like to do is to make a few ~~overly-crisp~~ points and then see what you are interested in and try to answer your questions. The first ^{point is one I made in a previous} ~~one is a point I make usually when I start~~

* Federation of American Societies for Experimental Biology.

talk.

~~talk~~ing now. It's strange to recall that even as recently as two or three years ago it was fashionable to begin speeches on almost any subject by recalling the persistence with which universities survived over the centuries. In spite of the trials and tribulations of social upheavals, political ebbs and flows, famine, wars and even direct attack, they can be said to have emerged basically unshaken. ^{In} The contrast to that ^{are} is the rapidly escalating ^{troubles} estimation of at least those institutions that NIH impinges on most directly... the escalating ^{growing} number who are said to have serious problems and ^{be} indeed, about ready to fold.

Focusing just on the medical schools for a moment, the last figure I read ^{recently} in one of the information sheets ^{that} was up to about 40 that can predict a time ~~in the future~~ in the next two or three years when their resources ^{and their obligatory output will meet} ~~and their obligatory output will meet~~ ^{Some} kind of confrontation between too few resources and too many commitments will, at the very least, require some changes. There is talk in terms of institutions actually going out of existence. We are ^{facile} talking in the spring of 1970 against a major uncertainty as far as academic institutions are concerned, and I think those of you who saw the CBS program last night on health problems viewed a major uncertainty concerning what we ^{are} ^{is} likely to ^{be done} do in the area of health over the next few years.

The second point that I would like to make has to do with biomedical research. I will do this by again quoting from a talk that I gave recently. "Thus it will not be hard for some historian of the future to document the reasons why in the late 20th century a rather agonizing reexamination of the nature and level of biomedical

research occurred as this nation became increasingly and quite appropriately concerned with the major and even survival-threatening problems of population, environmental pollution, racial polarization, education, self-governance and the potential for instant self-destruction. I would hope that our historian of the future would also find clear documentation that the biomedical scientific community not only welcomed this examination, but in fact participated actively in its conduct."

Against that background, though there is one factual point I would like to make. It should be the starting point of any ^{discussion} ~~discussion~~ ^{medical research} but is seldom mentioned in the climate of today. It is simply that the biomedical research endeavors of this nation constitute a ^{resounding} ~~ringing~~ success story. One cannot easily exaggerate the importance of the tremendous accomplishments of biomedical research in the last two decades or the contributions they have made to the ^{human} welfare of all mankind for all time. A future historian (surely will) note that it was at the precise point of greatest strength and productivity that the forward march in the support of biomedical research was called for an accounting. It was at a time when some spoke of an age of ~~a~~ biological revolution, and a time when the success of biomedical research was held up as a model for such causes as education, the organization and delivery of health services, the salvaging of the environment and the programs of other nations. I think it's important to realize that it was largely for this reason that many of us in the research area have become confused or angry or frustrated, ^{at the present} ~~which we perceive as~~ a failure to recognize what I've stated to be a fact.

I'd like to move from that to ^{another major responsibility that} the other two major areas that come under NIH responsibility. ^{which is the activities of} The first is the Bureau of ^{Health} Professional Education and Manpower Training and the second I will not spend time discussing since you had an opportunity to visit ^{the third major component of NIH, the National Library of Medicine} ~~it the National Library of Medicine~~ it this morning.)

The problems as far as manpower are concerned are moving very rapidly and the pressures to seek a solution have been expressed by Secretary Finch, by Dr. Egeberg, by me, by Dr. Endicott, and by just about everyone else. The dilemma we face ^{primarily} is that on the one hand we don't know the knowledge base of the mid-'70s or the '80s from which we will be delivering medicine. It would be much easier to design the educational processes if one knew that or alternatively, if one knew the nature of the pattern of organization and delivery of health services. I think there's been a willingness--quite frankly on all sides, certainly with the Congress and the executive part of government and many state legislators--to put the relatively small sums that would be needed in the education and training area, if one could have been sure that this was going to make a difference in the actual delivery of care.

One hears of a simplified example that the major effort a few years ago to increase the number of psychiatrists in this country because of the need in mental health institutions had an impact of increasing the number where there were psychiatrists already; that the problems in a time when there ^{where} was a shortage in other areas--specialists and general practitioners--^{the increased} to increase numbers tended ^{down} to follow the pattern of having them distributed to the suburbs rather than to the isolated rural areas and ghettos of the nation. There's

a question that emerged very strongly from the Manpower Commission Report of a few years ago, as you all know, that simply increasing manpower may not do anything significant in terms of ^{improving} ~~the improvement~~ of the health of those Americans who are now receiving the poorest health care.

I think, however, that whatever happens in the organization and delivery of health services over the next decade or two, all will agree that we need to ~~have~~ additional physicians, dentists, nurses and allied health workers, and that because of the great long lag time, we'd better continue trying to ^{augment} increase the conditions under which such individuals ^{can be made} will be available. It is well to remember that the financial support for education is limited, both in time and in dollars, as far as the federal government is concerned.

The government became involved in the direct support of medical education--and here I'm using ^{reference to} essentially the whole group of the health professions--as a part of ^{the} the major decision in the education field generally, ~~that the federal government should be involved there.~~ It was in 1963 when the basic education acts of the nation were passed, ~~that for the first time~~ ^{the} the health profession's Education Assistance Act was approved as a construction assistance authority, and then later, ^{as authority for support of} enlarged, ~~both to support the funds for~~ construction of new schools or expansion of existing ones, authority for student assistance through scholarships and loans, and authority for direct support of medical schools through the so-called special project grants. The grants were designed to stabilize ~~the~~ financially shaky institutions, to stimulate increased enrollment, and to seek greater efficiency and effectiveness in education. This law, as revised in

1968 and extended for a two-year period, will be up for reconsideration either this year or more likely in the next session of Congress. The allied health bill, incidentally, will be acted on as a separate piece of legislation, hopefully by July 1. Otherwise, existing authority expires at that time, and ~~there have been~~ bills that have been introduced for that purpose.

The final point I would like to make ^{and very briefly,} has to do with budget, and ~~I don't plan to go into any great detail.~~ The NIH educational portion has shown a relatively steady--some feel less-than-adequate--growth since the passage of the enabling legislation in 1963. This growth is predicted to continue in the ¹⁹⁷¹ budget. There's about a seven ^{\$28 million} per-cent increase between the '70 budget and the President's proposed '71 budget. This is an increase of some \$28 million, and this is what I would have been defending today if it hadn't been put off until tomorrow.

In the research area we've had two atypical periods. The first was the very rapid growth rate between the mid-'50s and the early '60s. ^{They in recent years have been leveling} There's been a flood in terms of actual dollars, but because of inflation, a decrease in the support of biomedical research in recent years. ^{A Departmental document} (widely leaked) and I'm not sure whether officially released--departmental document focuses on the need to reverse the downward trend and the support of research. This is reflected in the 1971 budget, where the President's proposed budget represents about a seven per cent increase over the 1971-budget. ^{however,} This is distributed, ~~however,~~ somewhat differently, with a higher proportion of dollars devoted to special areas. There are major increases in the area of population studies--for \$18 million; there are major

increases for cancer, particularly to explore and accelerate the work on the relationship of viruses and cancer, ^{And there are} significant increases in the cardiovascular area, particularly stimulated by scientific opportunities and the problems of premature death of the American male; significant increases in the area of dentistry, with the greater knowledge of the last decade and the possibility of having a major impact over the next decade; and a more modest increase in the dollars available for the Environmental Health Sciences Institute. All of this is summarized in the material ~~which is~~ available.

The outlook for NIH as a whole for 1971--and this still has to go through Congress, although in the past this has not proved to be a major stumbling block for NIH and I hope it's not this year-- ^{For fiscal 1972} is better than ~~last year~~ despite the continued problems that we all face in terms of ~~problems of~~ inflation, a very tight budget, and all of the other reasons that you are well aware of. Our job would be much easier in terms of carrying out our mandate without the very difficult problem of markedly ^{rising} ~~increasing~~ costs in the health field. Some anticipate that the \$63 billion national expenditure on health will become \$100 billion a year without necessarily ^{yielding} ~~having~~ much to ~~show in the way of~~ improved health. That type of figure makes the ~~sums~~ investments we're talking about seem relatively small. We're estimating total ^{all's time} investment for research and education at NIH of about a billion and a half dollars a year, which compared ^{with} to the ~~types of investments~~ ^{average} that industry puts into new approaches and research is a relatively small amount of money. Certainly, from any ~~other criteria~~ ^{other criteria} we're talking about a major investment, though.

One last word. The United States decided after World War II

launch a major effort
to put a major investment in biomedical research. As a result, by
almost any measurement ^{for} the number of Nobel Prize winners in ~~these~~ ^{this area}
~~areas and~~ productivity in terms of new discoveries moved forward
~~very~~ rapidly. It's inaccurate to say simply that we lead as far
as the world is concerned in the area of biomedical research. Some
of my friends abroad say that the totality of the human endeavor in
biomedical research at this time rests primarily on the policies
~~that~~ we carry out over the next decade or two in this country.
Some estimates are that we support at least half of the total human
effort in biomedical research ~~that's~~ carried out around the world.
The proportion is probably higher ^{if one totals the} ~~than that as I try to add up the~~
amounts.

There's a serious question as to whether as a nation we will
continue to put the investment of this type in ~~if you will~~ the
long-term future, ^{fund} whether now that times are tight, we will reduce
the amount of effort proportionately that we are putting into this
area. I am biased, ~~on this~~ but I feel very strongly that this is
one of the areas in which this country has made a major international
and historic contribution to the welfare of man. I think that at
the time ^{when} it's working well, that we should keep it working well -- and ~~improve~~
and should improve it.

HEALTH EXPECTATIONS AND REALITIES--1970*

ROBERT C. MARSTON, M.D.**

DEDICATIONS OF HOSPITALS, LIKE COMMENCEMENT EXERCISES, LOOK TO THE FUTURE. IN BOTH CASES, A TRIBUTE SHOULD BE PAID TO PRIOR ACCOMPLISHMENTS, BUT THE REAL FOCUS IS ON THE POTENTIALITIES FOR FUTURE SERVICE MADE POSSIBLE BY THE WORKERS OF THE PAST. IT IS IN THIS SENSE THAT THE DEDICATION OF THE METHODIST HOSPITAL OF MADISON IS AN IMPORTANT EVENT FOR ALL OF US ASSEMBLED HERE AND FOR MANY WHO ARE NOT PRESENT.

ONE OF THOSE IS PRESIDENT NIXON. IT GIVES ME GREAT PLEASURE TO REPORT TO YOU THAT SHORTLY BEFORE I LEFT WASHINGTON, I RECEIVED A CALL FROM THE WHITE HOUSE NOTING THAT THE PRESIDENT HAD BEEN INVITED TO ATTEND THESE CEREMONIES IN PERSON; THAT WHILE THIS WAS NOT POSSIBLE, HE WANTED ME TO EXTEND HIS CONGRATULATIONS TO THOSE RESPONSIBLE FOR THIS ACHIEVEMENT, HIS BEST WISHES TO EVERYONE HERE ASSEMBLED, AND HIS HOPE AND CONFIDENCE THAT THE EXPECTATIONS SYMBOLIZED BY THESE CEREMONIES WILL BE FULFILLED. FURTHERMORE HE SENT THIS AUTOGRAPHED PICTURE.

I CHOSE MY THEME FOR TODAY, "HEALTH EXPECTATIONS AND REALITIES--1970," AFTER READING THE METHODIST HOSPITAL ANNUAL 1968-69 REPORT AND OTHER MATERIALS SENT TO ME BY MR. JOHNSON AND AFTER TALKING WITH FRIENDS WHO KNOW THE MAJOR EFFORTS THAT ARE GOING INTO THE CREATION OF THIS NEW

*FOR PRESENTATION AT THE DEDICATION OF THE METHODIST HOSPITAL OF MADISON, WISCONSIN, MAY 8, 1970.

**DIRECTOR, NATIONAL INSTITUTES OF HEALTH, U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE.

METHODIST HOSPITAL--EFFORTS EMBODIED IN THE \$6 MILLION BUILDING PROGRAM AND, EVEN MORE IMPORTANTLY, IN THE SPLENDID ROLE THAT YOU SEE FOR THE FUTURE.

INDEED, THE ENTIRE DEDICATION FOCUSES ON TWO CLOSELY RELATED PHRASES: "THE CLOSE COOPERATION OF THE CITIZENS OF THE COMMUNITY AND THE HOSPITAL" AND "THE GOAL OF THE BEST POSSIBLE PERSONAL CARE FOR ALL." THESE PHRASES WOULD BE ONE THING IF THEY REFLECTED THE SPIRIT OF A NAIVE NEW ENTERPRISE. BUT COMING AS THEY DO FROM AN EXPERIENCED BOARD OF TRUSTEES, AND FROM THE MEDICAL AND ADMINISTRATIVE STAFF OF A HOSPITAL THAT ONLY TWO YEARS AGO CELEBRATED ITS 50TH ANNIVERSARY, THEY CAN ONLY REPRESENT A SERIOUS COMMITMENT. THESE KNOWLEDGABLE AND DEDICATED MEN AND WOMEN KNOW THAT OVER THOSE 50 YEARS WE HAVE NEVER HAD A PERIOD OF GREATER UNCERTAINTY IN HEALTH AFFAIRS THAN ONE SEES IN THIS COUNTRY TODAY.

NO ONE WHO READS A PAPER, WATCHES TELEVISION, OR TALKS TO OTHERS NEEDS TO BE REMINDED OF THE SERIOUS CONCERNS ABOUT RAPIDLY INCREASING HOSPITAL COSTS AND MANPOWER SHORTAGES. AT THE VERY LEAST, THERE IS THE PERCEPTION OF A WIDENING GAP BETWEEN EXPECTATIONS FOR PERSONAL HEALTH SERVICES, ON THE ONE HAND, AND THE ACTUAL DELIVERY OF THOSE SERVICES ON THE OTHER.

QUITE FRANKLY, I BELIEVE THE ODDS ARE AGAINST A RAPID AND EFFECTIVE RESOLUTION OF THE MAJOR AND COMPLEX PROBLEMS INVOLVED; BUT YOU HAVE ASPIRED "TO MEET THE TECHNICAL CHALLENGES OF MODERN SCIENCE AND TO ANSWER THE HEALTH NEEDS OF THE COMMUNITY." AND I WOULD NOT WANT ANYTHING I SAY TO DISCOURAGE YOU IN THE LEAST FROM THESE WORTHY GOALS. AT THE OUTSET, HOWEVER--AT THE DEDICATION, OR "COMMENCEMENT EXERCISE," WHERE FRANK TALK IS NOT ONLY WELCOME BUT EVEN EXPECTED--I WOULD MAKE THE POINT THAT THIS

THING CALLED HEALTH IS NOT A MONOPOLY OF HOSPITALS OR DOCTORS, OF NURSES OR OTHER HEALTH WORKERS. LET ME TRY TO ILLUSTRATE THIS.

I RECENTLY SAW A PICTURE IN THE LIFE SCIENCE LIBRARY WITH THE FOLLOWING CAPTION:

The woman striding along in the photograph at right is almost 80 years old. Her hearing and vision are better than most American teenagers', her teeth are sound, her heart strong. She is a Mabaan of the Sudan, and most of her fellow tribesmen are as healthy as she. . . . The Mabaans enjoy longevity that would be remarkable in the most medically pampered society. Furthermore, their declining years are almost free of the usual degenerative diseases of old age.

NOW LET US LOOK AT QUITE A DIFFERENT SITUATION. DURING THE 14TH CENTURY, TRADERS FROM PORTS OF THE MEDITERRANEAN AND BLACK SEA WOULD MAKE THEIR WAY TO CHINA AND BRING BACK PRECIOUS SILKS AND FURS. A GROUP OF GENOVESE MERCHANTS, RETURNING FROM SUCH A TRIP IN 1343, TOOK REFUGE FROM A BAND OF TARTARS IN THE TRADING POST OF CAFFA IN THE CRIMEA. THE TARTARS BESIEGED THE TOWN. FOR THREE YEARS, NEITHER SIDE MADE ANY HEADWAY. THEN THE TARTARS STOPPED CATAPULTING MERE ROCKS OVER CAFFA'S WALLS AND BEGAN HURLING BODIES--THE CORPSES OF THEIR OWN MEN WHO HAD DIED OF BUBONIC PLAGUE. THE GENOVESE SURVIVORS ESCAPED TO THEIR SHIPS AND SAILED AWAY. MANY OF THEM DIED ON SHIPBOARD, BUT THE REST LANDED IN CONSTANTINOPLE, GENOA, VENICE AND OTHER PORTS. THERE THEY INFECTED OTHER PERSONS, TOUCHING OFF THE WORST PANDEMIC IN THE HISTORY OF MANKIND--THE BLACK DEATH.

MY POINT IS THAT THE PROBLEMS OF HEALTH--INDEED, OFTEN THE MOST IMPORTANT PROBLEMS OF HEALTH--LIE BEYOND THE CONTROL OR EXPERTISE OF THE FIELD OF MEDICINE. THOSE IN THE COMMUNITY MUST REALIZE THAT PHYSICIANS

AND ALLIED WORKERS ARE NOT IN GENERAL ECONOMISTS OR SOCIOLOGISTS, POLITICAL SCIENTISTS OR POLITICIANS, LABOR LEADERS OR REPRESENTATIVES OF CONSUMER GROUPS. HEALTH WORKERS SHOULD NOT BE EXPECTED TO SOLVE SOCIAL PROBLEMS, BUT RATHER TO SERVE PRIMARILY IN THEIR AREAS OF EXPERTISE. JUST AS PRIMITIVE MAN BENEFITTED LITTLE BY ASCRIBING HIS ILLS TO THE WHIMS OF ANGRY GODS, SO MODERN MAN WILL ACCOMPLISH LITTLE BY VIEWING THE HEALTH PROFESSIONS AND INSTITUTIONS AS TOTALLY RESPONSIBLE FOR THE HEALTH ILLS OF THE NATION.

A SECOND MATTER I WOULD COMMENT ON IS THE PROBLEM OF ORGANIZATION AND DELIVERY OF HEALTH SERVICES--NOT TO GIVE ANSWERS, BUT ONLY TO IDENTIFY AN AREA IN WHICH IT IS LIKELY THAT EXPECTATIONS AND REALITY WILL COLLIDE. MY OWN PERSONAL THOUGHTS AND CONVICTIONS IN THIS REGARD ARE PERHAPS BEST DOCUMENTED BY MY ACTIONS AND WRITINGS WHILE DIRECTOR OF THE REGIONAL MEDICAL PROGRAMS. I FIRMLY BELIEVE, AND WAS WILLING TO DEVOTE A SIGNIFICANT PART OF MY LIFE TO THE IDEA, THAT WE MUST SEEK MORE ORDERLY AND EFFECTIVE SYSTEMS OF HEALTH CARE. FURTHER, I BELIEVE THAT THIS CAN BEST BE CARRIED OUT THROUGH REGIONALIZATION OF HEALTH RESOURCES WITH--TO QUOTE THE TITLE OF A TALK OF MINE AT THE TIME--"THE PATIENT IN MIND." THUS, I HAVE NOTED WITH INTEREST THE ACTIVE COMMITMENT HERE AT METHODIST TO WORK WITH ALL OF THE HEALTH RESOURCES OF THE AREA.

LET ME TURN FROM THESE TWO GENERAL COMMENTS--ONE REFERRING TO THE UNREALITY OF EXPECTING HEALTH RESOURCES TO COMPENSATE ADEQUATELY FOR BASIC COMMUNITY PROBLEMS (ENVIRONMENTAL HAZARDS, POVERTY, DISTRESS OF MODERN CIVILIZATION, OR IGNORANCE) AND THE OTHER SUGGESTING, NO LESS STRONGLY, THAT WITHOUT IMPROVED AND SYSTEMATIC DEPLOYMENT OF THE LIMITED RESOURCES FOR HEALTH ON A REGION-BY-REGION, COMMUNITY-BY-COMMUNITY BASIS, ONE CAN

EXPECT A CONTINUATION OF MANY OF THE PROBLEMS WE FACE TODAY. LET ME TURN, I SAY, FROM THESE STATEMENTS TO A CLOSER EXAMINATION OF WHAT THE COMMUNITY MIGHT REASONABLY, OR UNREASONABLY, EXPECT OF A HEALTH RESOURCE SUCH AS THIS HOSPITAL BY CONTRASTING IT WITH EXPECTATIONS IN AN EARLIER TIME.

WILLIAM OSLER MADE THIS STATEMENT ABOUT DOCTORS AND NURSES:

There are individuals--doctors and nurses, for example [he said at Johns Hopkins in 1891]--whose very existence is a constant reminder of our frailties; and considering the notoriously irritating character of such people, I often wonder that the world deals so gently with them. The presence of the parson suggests dim possibilities, not the grim realities conjured up by the names of the persons just mentioned; the lawyer never worries us--in this way, and we can imagine in the future a social condition in which neither divinity nor law shall have a place--when all shall be friends and each one a priest, when the meek shall possess the earth; but we cannot picture a time when Birth and Life and Death shall be separated from the "grizzly troop" which we dread so much and which is ever associated in our minds with "physician and nurse."

BUT IN THE SAME ADDRESS, THAT GREAT AND WISE PHYSICIAN ALSO STATED:

In the gradual division of labour, by which civilization has emerged from barbarism, the doctor and the nurse have been evolved, as useful accessories in the incessant warfare in which man is engaged.

YET AT THAT TIME IN HISTORY, IT IS UNLIKELY THAT TREATMENT BY A DOCTOR RESULTED VERY OFTEN IN REAL IMPROVEMENT IN THE PATIENT'S CONDITION.

MANY WILL REGARD THE EARLIER YEARS OF THIS CENTURY AS THE GOLDEN AGE OF PHYSICIANS. THE COMMUNITY WAS MORE APT TO BE IMPRESSED WITH THE LITTLE THEY DID ACCOMPLISH THAN WITH THE REGULARITY OF THEIR FAILURE. LITTLE WAS EXPECTED--WHICH CORRELATED CLOSELY WITH REALITY. TODAY, INCREASINGLY, A GREAT DEAL IS EXPECTED, AND THE FAILURES, STILL A DEPRESSING, INEVITABLE FACT OF MEDICINE, MUST (THEY SAY) BE SOMEBODY'S OR SOME INSTITUTION'S FAULT.

AGAINST THESE UNREASONABLE EXPECTATIONS ARE OTHER, QUITE REASONABLE COMMUNITY CONCERNS. I SHALL NAME ONLY THREE--

- O THOSE AREAS IN WHICH THERE IS AN ABSENCE OF ANY EFFECTIVE CARE, SUCH AS THE ISOLATED RURAL COMMUNITY OR THE URBAN GHETTO WHICH HAS JUST LOST ITS LAST PHYSICIAN.
- O THE PROBLEM OF COST, OVER WHICH THE INDIVIDUAL HAS EVEN LESS CONTROL THAN SOME OTHER AREAS. ONE CAN BUY A SECOND-HAND CAR OR EVEN A CHEAPER CUT OF MEAT, BUT THERE ARE USUALLY NO PRICE CHOICES IN MEDICINE--A CONCERN AT ALL INCOME LEVELS, BUT ESPECIALLY, IT SEEMS, TO THOSE WITH MIDDLE-LEVEL INCOMES.
- O A GROWING SENSE OF FRUSTRATION THAT EVEN IN THOSE NONPROFESSIONAL AREAS THERE IS NO EFFECTIVE WAY TO MAKE THE COMMUNITY'S AND THE INDIVIDUAL'S GRIEVANCES, HOPES, OR EXPECTATIONS KNOWN.

NEXT LET US LOOK AT THE OTHER SIDE OF THE COIN--AT THE MEDICAL PROFESSION'S EXPECTATION OF THE COMMUNITY. MEDICINE IS A DIFFICULT PROFESSION. IT DRAWS INTO IT DEDICATED AND SENSITIVE INDIVIDUALS WHO LIVE THEIR LIVES WITH A TYPE OF SINGLENES OF PURPOSE THAT SETS THEM APART FROM THE USUAL VALUE SYSTEMS OF THE CULTURE. QUITE FRANKLY, WE PHYSICIANS PROBABLY TEND TO EXPECT MORE UNDERSTANDING AND KNOWLEDGE, AND EVEN SUPPORT, THAN THE COMMUNITY CAN POSSIBLY DELIVER.

SOME OF US HAVE ALWAYS BEEN VAGUELY CONCERNED THAT THE BASIC ORGANIZATIONAL PRINCIPLE OF OUR PROFESSION HAS FOLLOWED THE MODE OF THE REST OF OUR INDUSTRIALIZED SOCIETY--THAT IS, THE PRINCIPLE OF COMPETITIVE BUSINESS. THIS IS AN IMPORTANT ISSUE FOR THE FUTURE, BUT NOT FOR MY SPECIFIC DISCUSSION TODAY. THE EXPECTATION-REALITY GAP FROM THE PROFESSIONALS' STANDPOINT-- PHYSICIANS, DENTISTS, NURSES, ALLIED HEALTH PROFESSIONALS--

FOCUSES MORE ALONG THE FOLLOWING LINES:

- o THE BASIC PATTERN OF THE SUBSTANCE OF OUR PROFESSIONS (AS OSLER NOTED) FIXES OUR ATTENTION DAY BY DAY ON THE INDIVIDUAL TRAGEDY AND VICTORY, RATHER THAN THE BROADER COMMUNITY CONCERN. ESPECIALLY IN AREAS WHERE OUR EXPERTISE IS OF LIMITED VALUE, WE TEND, OR HAVE TENDED, TO DISSOCIATE OR BECOME ANGRY WITH GROWING PAPER WORK, MISUNDERSTANDING, OR PERCEIVED INTERFERENCE IN THE PRACTICE OF MEDICINE.
- o SIMPLE OVERWORK AND OVER-COMMITMENT IS A PROBLEM. JUST THIS WEEK I HEARD ANOTHER REPORT OF AN OVERWORKED PHYSICIAN LEAVING HIS PRACTICE ABRUPTLY AFTER SOME MONTHS OF INCREASED DEMANDS OCCASIONED BY THE ILLNESS OF A NEARBY FELLOW PHYSICIAN. OVERLOADS ON EMERGENCY ROOMS, AMBULATORY CARE FACILITIES, AND HOSPITALS PRESENT SIMILAR EXAMPLES, IN WHICH MORE IS EXPECTED OF INDIVIDUAL INSTITUTIONS THAN CAN BE REALISTICALLY DELIVERED.
- o THE RELATIONSHIP OF HOSPITALS AND THE COMMUNITY CONSTITUTES A SPECIAL ISSUE. THERE IS MUCH TALK TODAY OF THE PROBLEMS THAT HOSPITALS ARE CAUSING BECAUSE OF RISING COSTS; BECAUSE THE VERY WALLS, SOME FEEL, CONSTITUTE A BARRIER; AND BECAUSE HOSPITALS REPRESENT MAJOR INVESTMENTS WHICH ARE UTILIZED AT ANY ONE TIME BY ONLY A SMALL PORTION OF THE POPULATION AND ARE NOT WELL COORDINATED WITH THE OTHER HEALTH RESOURCES OF THE COMMUNITIES.

THUS THERE IS A SERIOUS NEED FOR JUST SUCH ATTEMPTS TO CLOSE THESE GAPS AS YOU SYMBOLIZE TODAY.

WITH THESE PROBLEMS IN MIND, I SHOULD LIKE TO TURN TO MY LAST TWO SUBJECTS. LET US ASSUME THAT IT WERE POSSIBLE TO HAVE AN IDEALIZED SYSTEM FOR THE ORGANIZATION AND DELIVERY OF HEALTH SERVICES---THAT THE PROBLEMS OF THE DOCTOR IMAGE AND THE HOSPITAL IMAGE ARE THINGS OF THE PAST. WHAT ARE SOME OF THE AREAS OF POSSIBLE CONTINUED GAP BETWEEN EXPECTATIONS AND REALIZATIONS? I WOULD CHOOSE TWO MAJOR ONES: MANPOWER AND KNOWLEDGE.

WE MUST INCREASE THE AVAILABILITY OF ADEQUATELY TRAINED HEALTH PERSONNEL. UNDER THE BEST OF CIRCUMSTANCES, HOWEVER, THE AGE-OLD INEVITABLE CONFLICTS BETWEEN THE DESIRE, ON THE ONE HAND, FOR THE BEST SCIENTIFIC AND TECHNICAL COMPETENCE AND, ON THE OTHER, FOR IMMEDIATELY AVAILABLE, PERSONAL, AND COMPASSIONATE INDIVIDUALIZED CARE WILL CONTINUE. MEDICINE OF THE FUTURE WILL STILL POSE THIS DILEMMA, AND IT WOULD BE A MAJOR FAILURE TO POLARIZE IT IN EITHER DIRECTION. HUMAN NEEDS CANNOT BE MET BY THE AUTOMATED LAB AND THE COMPUTER, NOR BY THE INCOMPETENT, THOUGH COMPASSIONATE, WELL-WISHER. (ONCE AGAIN I FIND THAT THE WRITTEN MATERIAL YOU SENT ME STRIKES THE PROPER NOTE.) THE HEALTH OF PEOPLE IS OUR REASON FOR BEING. TO ACHIEVE THIS REQUIRES BOTH HIGHLY SPECIALIZED PERSONNEL AND EQUIPMENT, USED WITH THE ULTIMATE GOAL ALWAYS IN MIND.

FINALLY, THE PRIMARY DETERMINANT OF THE LEVEL OF CARE IN THE FUTURE WILL BE, AS IN THE PAST, THE STATE OF MEDICAL KNOWLEDGE. IT SEEMS LIKELY THAT PUBLIC EXPECTATION WILL IN GENERAL CONTINUE TO EXCEED WHAT CAN BE DONE, DESPITE THE EXPLOSION OF NEW KNOWLEDGE OCCURRING IN LABORATORIES AND CLINICS THROUGHOUT THIS COUNTRY.

TWO FACTORS ARE LIKELY TO LEAD TO MORE OPTIMISM---THEREFORE, MORE IMPATIENCE---THAN WOULD OTHERWISE BE THE CASE. THE FIRST IS THE TRULY HISTORIC DRAMA OF THE INFECTIOUS DISEASES, WHERE THE INTRODUCTION OF

ANTIBIOTICS AND THE EXPLOSIVE ADVANCES IN VIROLOGY--INCLUDING THE CONTROL OF INFECTIOUS DISEASES THROUGH VACCINATION--CONSTITUTE AN UNPARALLELED PHENOMENON IN THE ANNALS OF SCIENCE. THE LIKELIHOOD OF THE COMPLETE AND SUDDEN CONTROL OF MAJOR CHRONIC DISEASES, SUCH AS THOSE ASSOCIATED WITH THE AGING PROCESS--ARTHRITIS, HEART DISEASE, CANCER--SEEMS REMOTE, DESPITE THE FACT THAT TRULY ENCOURAGING, EVEN EXCITING PROGRESS IS BEING MADE.

THE SECOND REASON THAT EXPECTATIONS ARE LIKELY TO EXCEED REALITY IN THIS AREA IS THE CONFUSION BETWEEN COMPLEX ENGINEERING FEATS AND THE DISCOVERY OF BASIC KNOWLEDGE. BIOMEDICAL RESEARCH TODAY IS PROBING THE UNKNOWN OF THE MOST BASIC LIFE PROCESSES--STILL AREAS OF PROFOUND MYSTERY. THE FUTURE IMPLICATIONS OF THESE ENDEAVORS WILL STAND AMONG THE MOST IMPORTANT IN THE HISTORY OF ALL MANKIND. BUT BECAUSE WE ARE WORKING WITH THE UNKNOWN, THE EMPHASIS MUST BE ON CREATIVITY, NOT PROGRAMMING--SCIENCE, NOT ENGINEERING--THE IMPORTANT, NOT THE URGENT--GENIUS, NOT QUANTITY.

I SHALL NOT SUMMARIZE THESE COMMENTS: YOUR PRESENCE HERE TODAY INDICATES YOUR COMPETENCE TO PICK AND CHOOSE THAT WHICH HAS MEANING FOR YOU. I STARTED BY SAYING THAT THIS CEREMONY IS FOCUSED ON THE FUTURE--RECALLING THAT YOU HAVE RECENTLY CELEBRATED YOUR FIFTIETH ANNIVERSARY. DURING THE NEXT FIFTY YEARS, ALMOST ALL OF THE ADULTS HERE WILL PASS ON. SO IN A REAL SENSE, THIS NEW HOSPITAL IS DEDICATED TO SERVE THE YOUTH OF TODAY AND THE GENERATIONS OF THE FUTURE.

THERE ARE PROBLEMS BETWEEN THE EXPECTATIONS AND REALITIES OF THE VARIOUS GENERATIONS IN THIS COUNTRY--ON THIS WEEKEND ESPECIALLY. THUS IT IS WITH SPECIAL FEELING THAT I DEDICATE THIS BUILDING, BUT FAR MORE IMPORTANTLY ALL THE HOPES AND ASPIRATIONS SYMBOLIZED BY IT, TO BE USED AS BEST IMPERFECT HUMANS CAN USE IT TO MINISTER TO THE NEEDS OF ALL

PEOPLE OF ITS COMMUNITY, BUT MORE ESPECIALLY TO HELP, PROTECT, SUPPORT, ASSIST, AND INCREASINGLY OFTEN, TO ELIMINATE THE HEALTH PROBLEMS OF THE YOUTH AND THE FUTURE GENERATIONS OF THIS AREA.

SYSTEM RATHER THAN THE INDIVIDUAL EXCELLENCE. OR, AS I HAVE TRIED TO POLARIZE THE QUESTION EVEN MORE EXTREMELY--THE "HEALER" RATHER THAN THE HEALTH SCIENTIST.

THERE ARE OTHER REASONS WHY I CHOSE THE TITLE "THE SCIENTIST-VS.-THE-HEALER DEBATE, REVISITED." THIS TALK FALLS ABOUT MIDWAY BETWEEN SOME OTHERS I AM MAKING, AND THEY COVER A SPECTRUM OF TOPICS THAT ARE GENERALLY RELATED. ONE WAS ENTITLED "THE SUPPORT OF BIOMEDICAL RESEARCH," DELIVERED AT THE RECENT FEDERATION MEETINGS IN ATLANTIC CITY. A SECOND TALK JUST LAST WEEK--AT THE DEDICATION OF A HOSPITAL IN MADISON, WISCONSIN--WAS ON "HEALTH EXPECTATIONS AND REALITIES, 1970." AND NEXT WEEK, AT THE VIRGINIA MILITARY INSTITUTE GRADUATION EXERCISES, I AM SCHEDULED TO SPEAK ON "THE ROLE OF KNOWLEDGE AND WISDOM IN YOUR TIME." THUS, PERHAPS IT WAS INEVITABLE THAT ABOUT NOW--HAVING SPOKEN TO SCIENTISTS ABOUT RESEARCH NEEDS, HAVING DISCUSSED COMMUNITY HEALTH NEEDS AT THE DEDICATION OF A COMMUNITY HOSPITAL, AND HAVING CONSIDERED THE RELATIONSHIP OF EXPERT KNOWLEDGE TO CONSUMER NEEDS--THAT I WOULD FOCUS TODAY ON AN AGE-OLD DEBATE IN MEDICINE: THE ROLE OF THE HEALER VERSUS THE SCIENTIST.

BUT MORE IMPORTANT THAN THESE REASONS IS MY CONVICTION THAT MANY OF THE HEALTH DECISIONS WE FACE TODAY IN THIS COUNTRY REQUIRE A REEXAMINATION OF THIS QUESTION.

LEST I BE MISUNDERSTOOD, LET ME SAY THREE THINGS IN WHICH I BELIEVE DEEPLY AND PERSONALLY. FIRST, WE MUST FIND, AS RAPIDLY AS POSSIBLE, WAYS TO MEET THE TOTAL HEALTH NEEDS OF OUR PEOPLE MORE PREDICTABLY AND MORE EFFICIENTLY THAN WE ARE DOING AT PRESENT. THIS WILL REQUIRE MAJOR AND AGONIZING CHANGE, NOT ONLY INSIDE BUT, PERHAPS EVEN MORE IMPORTANTLY, OUTSIDE OF THE HEALTH PROFESSIONS. SECONDLY, I AM FIRMLY CONVINCED OF

THE NATIONAL NEED FOR AT LEAST THE CURRENT PROGRAM LEVEL OF INVESTMENT IN THE SEARCH FOR NEW KNOWLEDGE AND THE MOTIVATION AND TRAINING OF INDIVIDUALS TO CARRY OUT THAT SEARCH. THIRDLY, I AM CONVINCED, AS I AM SURE EACH OF YOU ARE CONVINCED, THAT MEDICINE MUST CONSTITUTE A MIXTURE OF THE HEALER AND THE SCIENTIST—THAT FAR FROM BEING INCOMPATIBLE IN ESSENCE, QUITE THE OPPOSITE IS REALLY TRUE.

AGAINST THIS BACKGROUND, LET ME REVIEW VERY BRIEFLY THE DEBATE AS I UNDERSTAND IT. IN ITS EARLIEST FORMS, THE HEALER ASPECT WAS MERGED WITH MYSTICISM, LARGELY RELIGIOUS, IN THE MODE OF THE PRIEST-PHYSICIAN, BUT WAS ALSO EVIDENT IN AN ALTERED FORM IN THE POWER OF THE KING'S TOUCH TO CURE DISEASES, SUCH AS SCROFULA. IN THE LIGHT OF THESE CONCEPTS, IT IS SOMEWHAT SURPRISING THAT THE ANCIENT UNIVERSITY AT SALERNO SHOULD HAVE INCLUDED A FACULTY OF MEDICINE. THAT DECISION MORE THAN 900 YEARS AGO WAS UNDOUBTEDLY INFLUENCED BY THE FACT THAT HIPPOCRATES, FIFTEEN CENTURIES EARLIER, HAD INSTITUTED A SCIENTIFIC APPROACH TO MEDICAL PRACTICE.

IN THIS COUNTRY, THE FLEXNER REPORT FOCUSSED ATTENTION ON THE PROBLEMS OF MEDICINE AS WE ENTERED THE 20TH CENTURY. BUT LISTEN TO WHAT BLANTON SAYS, FIRST ABOUT AMERICAN MEDICINE IN THE 18TH CENTURY AND THEN THE 19TH:

Although the 18th century Virginia doctor was better educated than his predecessor of the 17th century, although he had a more intelligent clientele, more books and better means of communication, he was seriously handicapped by his devotion to theory, and it is doubtful if his notions of medical practice or his therapy were much in advance of those of the preceding century. In fact he had nothing upon which to base any improvement. His method of examination of patients and his conception of the cause and mechanism of disease were fully as faulty as they had been 100 years before.... The Virginia doctor continued to sweat, blister, purge, vomit and bleed his patients with the same traditional faith and the same inevitable results. The

three phlebotomies which figured so largely in the treatment of George Washington's last illness, and about which so much controversy was later waged, show how firmly this method of therapy was entrenched as late as 1800.

IN HIS BOOK ON THE 19TH CENTURY, BLANTON MAKES THIS COMMENT:

From a single institution in 1765 the number of medical schools had risen to 160 in 1900, some of them good, some of them bad, many of them worthless. Charters were easily secured, candidates were abundant, and there were few examining boards to bar the way to public preferment. Under these conditions, medical schools--many of them flagrant diploma mills--multiplied rapidly. At one time, Illinois boasted of fifteen schools, Tennessee of ten, Maryland of eight, and Kentucky of seven.

THE FLEXNER REPORT WAS FOLLOWED BY A RAPID AND DECISIVE SERIES OF ACTIONS DESIGNED TO PROTECT THE QUALITY OF BOTH THE EDUCATIONAL INSTITUTIONS AND THE PRACTICE OF MEDICINE. MEDICAL SCHOOLS AND MEDICAL PRACTICE BECAME RIGIDLY FIXED IN THE POST-FLEXNER PATTERN AND REMAINED SO WITH LITTLE CHANGE UNTIL AFTER WORLD WAR II. IT SHOULD BE REMEMBERED THAT, DESPITE THIS EMPHASIS ON QUALITY, WE DID TOLERATE THE EXISTENCE OF CLASS B MEDICAL SCHOOLS UNTIL THE EARLY 1940s; AND HAHNEMANN CONVERTED FROM A SCHOOL OF HOMEOPATHY TO A SCHOOL OF MEDICINE AS RECENTLY AS 1935. DURING THAT RELATIVELY LONG PERIOD OF LITTLE CHANGE, NOT MUCH DISTINCTION WAS MADE BETWEEN THE HEALER ASPECT AND THE SCIENTIST ASPECT OF MEDICAL PRACTICE. SERIOUS POSTGRADUATE STUDY WAS LIMITED TO A RELATIVELY FEW INSTITUTIONS IN THIS COUNTRY, AND WE STILL RELIED HEAVILY ON THE GREAT CENTERS OF EUROPE. INDEED, THEY CONTINUED TO SUPPLY MUCH OF THE LEADERSHIP IN MEDICINE, BOTH IN PRACTICE AND ON THE ACADEMIC SIDE, UNTIL THOSE GREAT CENTERS WERE DESTROYED IN WORLD WAR II.

TOWN-GOWN DEBATES WERE MINIMIZED BECAUSE OF THE DOMINANT ROLE OF THE LEADING PRACTITIONERS OF THE COMMUNITY IN THE EDUCATIONAL ENDEAVORS OF MANY OF THE SCHOOLS OF THE COUNTRY--OR PUT THE OTHER WAY AROUND , THE LEADING ROLE PLAYED BY THE PROFESSION^{ORS}~~ERS~~ IN THE PRACTICE OF MEDICINE AND ITS ORGANIZATIONS, SUCH AS THE A^{MA}. BUT THE SEEDS OF PROBLEMS OF THE FUTURE COULD BE SEEN AS EARLY AS 1902, WHEN A DECISIVE FACTOR IN WILLIAM OSLER'S LEAVING JOHN'S HOPKINS TO BECOME THE REGIUS PROFESSOR OF MEDICINE AT OXFORD WAS HIS VIGOROUS OPPOSITION TO THE INTRODUCTION AT HOPKINS OF THE FULL-TIME FACULTY SYSTEM.

FOLLOWING WORLD WAR II, THERE WERE SEVERAL INFLUENCES LEADING TO CHANGE--NOTABLY, THE GENERAL APPRECIATION OF THE EFFECTIVENESS OF SCIENCE IN WINNING THE WAR, AND THE FAVORABLE RECEPTION TO VANNEVAR BUSH'S REPORT SCIENCE, THE ENDLESS FRONTIER, WHICH CALLED FOR A MAJOR NATIONAL INVESTMENT IN SCIENCE GENERALLY AND MEDICAL SCIENCE IN PARTICULAR. ANOTHER MAJOR INFLUENCE, OF COURSE, WAS THE GROWTH OF FEDERAL SUPPORT FOR BIOMEDICAL SCIENCE, WHICH HAS BEEN DESCRIBED OFTEN. HOWEVER, DURING THIS PERIOD OF THE PREVALENT ACCEPTANCE OF THE SUPPORT OF BIOMEDICAL SCIENCE AS AN APPROPRIATE FEDERAL FUNCTION, THE GOVERNMENT WAS SPECIFICALLY AND HEATEDLY DEEMED AN INAPPROPRIATE SOURCE OF FUNDS FOR MEDICAL EDUCATION OR THE DELIVERY OF HEALTH SERVICES. NOT UNTIL 1963, WITH THE PASSAGE OF THE HIGHER EDUCATION ACT, DID THE FEDERAL GOVERNMENT BECOME INVOLVED IN SERVICE-ORIENTED MEDICAL EDUCATION.

*for education generally & for research educational institutions
act for medical*

INDEED, THE UTILIZATION OF RESEARCH FUNDS FOR NONRESEARCH PURPOSES, DESPITE MUCH LOOSE TALK TO THE CONTRARY, HAS IN FACT BEEN CONTROLLED BY RATHER RIGID MONITORING. FAILURE TO SHOW RESEARCH PRODUCTIVITY AT THE TIME OF COMPETING RENEWAL APPLICATIONS HAS ALMOST SURELY JEOPARDIZED

FUTURE SUPPORT, DESPITE PLEAS OF SALUTARY INFLUENCES ON TEACHING OR SERVICE ACTIVITIES. ^{Faculties have} FOR A NUMBER OF YEARS, THE FISCAL MONITORING OF THE USE OF FUNDS REQUIRED THAT ANYONE RECEIVING RESEARCH SUPPORT SHOULD FILE A TIME-AND-EFFORT REPORT. THIS IS NOT TO SAY THAT THE SUPPORT OF RESEARCH DID NOT HAVE BENEFICIAL EFFECTS BOTH IN EDUCATION AND SERVICE, FOR QUITE THE OPPOSITE IS THE CASE. FACULTIES WITH GREATER DIVERSITY OF TALENTS AND RESEARCH EXPERIENCE HAVE ENRICHED THE ENTIRE ENVIRONMENT OF EDUCATION.

IT WAS NOT UNTIL 1965, AT THE END OF A MAJOR NATIONAL DEBATE, THAT THE FEDERAL GOVERNMENT BECAME INVOLVED IN THE FINANCING OF MEDICAL SERVICES THROUGH MEDICARE AND MEDICAID, AND IN THE ORGANIZATION AND DELIVERY OF CARE THROUGH THE COMPREHENSIVE HEALTH AND REGIONAL MEDICAL PROGRAMS. AS RECENTLY AS FIVE YEARS AGO, THE LAWS AUTHORIZING THESE PROGRAMS EXPLICITLY PROHIBITED INTERFERENCE WITH THE PRACTICE OF MEDICINE. THE MEDICARE LEGISLATION, FOR EXAMPLE, STATED:

Nothing in this title shall be construed to authorize any Federal office or employee to exercise any supervision or control over the practice of medicine or the manner in which medical services are provided. . . .

AND FROM THE REGIONAL MEDICAL PROGRAMS:

. . . by these means, to improve generally the health manpower and facilities available to the Nation, and to accomplish these ends without interfering with the patterns, or the methods of financing, of patient care or professional practice, or with the administration of hospitals

TO MOVE FROM HISTORY TO THE SPRING OF 1970, THIS COUNTRY IS COMMONLY VIEWED AS BEING VERY STRONG AND A WORLD LEADER IN THE HEALTH FIELD, BUT ALSO AS BEING THE ONLY ADVANCED NATION WITHOUT A WORKABLE SYSTEM FOR

MEETING THE HEALTH NEEDS OF ALL ITS PEOPLE. FEW DENY ANY LONGER THAT WE HAVE A HEALTH CRISIS--A CRISIS OF MANPOWER, OF ORGANIZATION, OF COSTS.

HEREIN LIES THE PRESENT POLARIZATION BETWEEN HEALER AND SCIENTIST, WITH SOME SAYING THAT TRUE PROGRESS IN IMPROVING THE HEALTH OF THE PEOPLE WILL DEPEND UPON INCREASED KNOWLEDGE AND WELL-TRAINED PHYSICIANS WHO ARE PROBLEM SOLVERS PREPARED FOR A LIFETIME OF CHANGE. ON THE OTHER HAND, THERE ARE THOSE WHO ATTRIBUTE THE BREAKDOWN IN THE REAL WORLD NOT TO LACK OF KNOWLEDGE, BUT TO LACK OF AVAILABILITY AND ACCESSIBILITY; WHO SAY THAT WE MUST MEET THE URGENT NEEDS OF TODAY, FOR THERE MAY BE NO TOMORROW; WHO BELIEVE THAT THE PENDULUM HAS SWUNG TOO FAR TOWARD THE SCIENTIST AND AWAY FROM THE HEALER, AND THAT THIS MUST BE CHANGED SWIFTLY AND RADICALLY.

ALTHOUGH I COULD DEBATE WITH EQUAL VIGOR THE TWO POSITIONS--THE URGENT NEED FOR MORE HEALTH WORKERS MORE ADEQUATELY DEPLOYED, OR THE NEED FOR INVESTMENT IN THE FUTURE--MY PURPOSE TODAY IS RATHER TO REVISIT THIS DEBATE FROM THE STANDPOINT OF ITS PRACTICAL IMPLICATIONS. FOR THERE ARE IMPLICATIONS, EVEN OF RELATIVELY SLIGHT SHIFTS ALONG THE SPECTRUM EXTENDING FROM THE KINDLY KNOW-NOTHING, DEDICATED BUT DANGEROUS, ON THE ONE HAND, TO THAT TYPE OF SCIENTIST (WHEREVER THE DIVIDING LINE MAY BE) WHOSE WORK BEARS LITTLE PROBABLE RELEVANCE TO HEALTH AND MUST THEREFORE BE EVALUATED ON SOME OTHER PRIORITY SCALE. PARENTHETICALLY, LET ME SAY THAT THE NATIONAL INSTITUTES OF HEALTH, AS A MISSION-ORIENTED AGENCY, IS NOT KNOWINGLY INVOLVED IN ANY FIELDS OF SCIENCE NOT RELEVANT TO HUMAN HEALTH AND DISEASE.

I KNOW OF NO REASON WHY EACH INDIVIDUAL SHOULD STAND AT THE EXACT SAME SPOT BETWEEN THESE ILLOGICAL EXTREMES, EITHER IN TERMS OF HIS INFLUENCE, CURRENT ACTIVITIES, OR PERSONAL PHILOSOPHY. ON THE CONTRARY,

IT IS IMPORTANT THAT EACH PROFESS HIS WISHES, HOPES, ASPIRATIONS, AND CURRENT AMBITIONS, AND THAT THESE BE EXAMINED AGAINST THE BACKGROUND OF EXISTING FACT AND IMPLICATIONS FOR THE FUTURE. I HAVE CHOSEN TO EXPLORE ^{Three} ~~Four~~ IMPLICATIONS. THE FIRST IS THE INCREASING CONFLICT BETWEEN THE MEDICAL PROFESSION AND THE BROADER CULTURE. IF UNRESTRAINED, THIS CONFLICT PRESSES TOWARD THE HEALER AND AWAY FROM THE SCIENTIST. BUT WALTER HAMILTON POINTED OUT IN 1932, IN A MINORITY REPORT TO THE COMMITTEE ON THE COST OF MEDICAL CARE, THAT WE SHOULD NOT CONFUSE WHAT HE CALLED THE "TECHNOLOGY OF MEDICINE" WITH THE ORGANIZATION OF MEDICINE.

THE PROBLEM ARISES WHEN THE ANCIENT, TRADITIONAL IDEALISM OF MEDICINE IS CONFRONTED, FIRST, WITH ONE'S NEED TO MAKE A LIVING FROM THE PAIN OF OTHERS, AND SECONDLY, WITH OUR UTILIZATION OF THE BUSINESS PRINCIPLE AS AN ORGANIZING MECHANISM FOR THE DELIVERY OF SERVICES. THIS IS A MATTER THAT IS LARGELY INDEPENDENT OF THE QUESTIONS CONCERNING THE RELEVANCE OF MEDICAL SCIENCE, THE NATURE OF THE EDUCATIONAL PROCESS, THE SOLVENCY OF ACADEMIC INSTITUTIONS, OR THE PARTICULAR DEPLOYMENT OF HEALTH-MANPOWER AND OTHER RESOURCES THROUGHOUT THE SOCIETY.

HAMILTON SAID:

The organization of medicine is not a thing apart which can be subjected to a study in isolation. It is an aspect of a culture whose arrangements are inseparable from the general organization of society.

The ways and means for putting medicine in order must take account of the conditions of life and work among the people whom it must serve. Nor is the organization of medicine a thing which is; it was only yesterday a very different affair; and, whether we assert control or leave it to drift, it will be something different tomorrow.

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If it is to be true to its high calling, the interests of patients and of physicians alike demand that it be kept out of business.

Here is the heart of the problem of the organization of medicine. A profession has, quite by an historical accident which was not foreseen, fallen into a world of business and is making the adaptation which seems necessary to survival. It has all come about so slowly and so much by stealth that the program of control essential to the maintenance of the integrity of the traditional ideal could not be formulated. As a result the older order of "private practice" is being transformed into a system of competitive enterprise, which no one has consciously willed and which in insidious ways interferes with the great social task which medicine is to perform. In a pre-industrial era, medicine in the hands of private practitioners was a "public service." In the modern industrial world business enterprise must be sacrificed, if need be, in order that medicine may remain -or again become--a public service. The older ideals must persist, even at the cost of giving up an instrumentality which has proved valuable. This end is paramount; and I believe it can be attained only by a complete elimination of the aims and the arrangements for profit-making from the practice of the art. This brief statement allows little in the way of detail, but a mere outline may give something of a concrete picture of what an adequate medical service must be.

IN SEEKING TO MEET THE HEALTH NEEDS OF THE AMERICAN PEOPLE WITHOUT SEPARATING THE "TECHNOLOGY OF MEDICINE" FROM THE ORGANIZING PRINCIPLE, UNNECESSARY CONFUSION HAS OCCURRED. THE AVAILABILITY AND ACCESSIBILITY OF VARIOUS LEVELS OF HEALTH CARE ARE MORE CLOSELY RELATED TO THE GENERAL ORGANIZATION OF OUR SOCIETY AND OF HEALTH CARE SPECIFICALLY THAN TO THE CURRICULUMS OF SCHOOLS, THE PRODUCTION OF PARTICULAR TYPES OF HEALTH WORKERS, OR THE EMPHASIS ON QUALITY WITHIN THE PROFESSION. SPECIFICALLY, PROBLEMS OF ORGANIZATION ARE PROBLEMS OF ORGANIZATION, NOT OF SPECIALIZATION, EMPHASIS ON RESEARCH, OR MISDIRECTION OF ACADEMIC INSTITUTIONS-- TO PICK ONLY THREE CONVENIENT STRAWMEN.

SOME SPEAK OF THE SIMILARITIES OF THE HEALTH INDUSTRY TO SUCH PARTIALLY CONTROLLED ENTERPRISES AS PUBLIC UTILITIES; SOME HAVE WORKED AS I HAVE FOR THE CONCEPT OF REGIONALIZATION, IN HOPES THAT THE MAIN FOCUS WILL BE THE NEEDS OF PEOPLE RATHER THAN THE INTRODUCTION OF A RIGID SYSTEM; OTHERS SPEAK OF THE INEVITABILITY OF NATIONALIZATION OF HEALTH SERVICES, SIMILAR TO ONE OF THE SEVERAL MODELS SEEN IN OTHER COUNTRIES--MODELS, I MIGHT SAY, THAT PRESENT A MIXTURE OF ADVANTAGES AND DISADVANTAGES. THE DECISIONS OF THIS TYPE ARE NOT MADE BEHIND CLOSED DOORS, BUT ONLY AFTER SERIOUS DEBATE AND A CAREFUL TESTING OF THE COMPLEX PRESSURES EXISTANT IN A DEMOCRATIC SOCIETY. INDEED, IT IS PROBABLE THAT WE WILL GO THROUGH SEVERAL STAGES IN THE EVOLUTION OF HEALTH-CARE SYSTEM. THESE ARE URGENT PROBLEMS, IMPORTANT PROBLEMS; AND THEY WILL INEVITABLY HAVE A MAJOR IMPACT ON THE NATURE OF MEDICINE AND OF THOSE WHO PRACTICE IT.

THE COROLLARY IS LESS TRUE. THE RELATIVE RATE OF DEVELOPMENT OF NEW SCIENTIFIC KNOWLEDGE AND THE EDUCATION OF PRACTITIONERS, WHILE HAVING A DOMINANT EFFECT ON THE SUBSTANCE OF MEDICAL PRACTICE, IS UNLIKELY TO HAVE A SIGNIFICANT IMPACT ON THE ORGANIZATION OF MEDICINE. THERE ARE THOSE WHO DISAGREE WITH ME, AND PERHAPS THEY ARE RIGHT, BUT I SUSPECT THAT THEY ARE DISHEARTENED BY THE PROSPECT OF AN ATTACK ON A STRONG AND RAPIDLY GROWING \$65 BILLION INDUSTRY AND THUS SEEK THE ANSWERS RATHER WISTFULLY ALONG THE MEDICAL SCIENCE AND EDUCATION ROUTE.

MY SECOND THEME CONCERNS THE INCREASING POLARIZATION WITHIN THE PROFESSION ITSELF. SUCCESSIVELY, MEDICINE AS A MYSTIC CULT AND MEDICINE AS AN APPRENTICESHIP HAVE GIVEN WAY TO THE UNIFORM ACCEPTANCE OF MEDICINE AS A SCIENTIFICALLY BASED AND FUNCTIONING PROFESSION. SERIOUS SCHOLARS AND PHYSICIANS, HOWEVER, ARE ASKING IF WE SHOULD PROTECT THE SCIENCE BASE BY SEQUESTERING IT IN EITHER THE "BEST" EDUCATIONAL INSTITUTIONS OR EVEN IN RESEARCH INSTITUTES.

ON THE OTHER HAND, THERE ARE THOSE WHO ARE EQUALLY SERIOUS, I SUPPOSE, IN SUGGESTING THE CREATION OF NEW TYPES OF INSTITUTIONS WITH NEW TYPES OF PRODUCTS WHICH THEY SOMETIMES TERM "COMMUNITY MEDICAL COLLEGES"--ANALOGOUS TO THE TWO-YEAR COMMUNITY COLLEGES. THE LATTER ARGUE, FIRST, THAT THE COST WOULD BE LOWER, SINCE THEY WOULD NOT HAVE THE RESPONSIBILITY FOR EITHER RESEARCH OR POSTGRADUATE EDUCATION, AND SECONDLY, THAT BY FOCUSING THROUGHOUT THE EDUCATIONAL EXPERIENCE ON THE HEALTH NEEDS OF A SPECIFIC COMMUNITY, THE DISTORTIONS OF EXISTING INSTITUTIONS WOULD BE AVOIDED.

THESE CONCLUSIONS EMANATE FROM CONCERNS FOR THE OPPOSITE ENDS OF THE SPECTRUM I POSTULATED, AND FROM THE BACKGROUND OF THE UNFORTUNATE EVIDENCE OF THE LAST FEW YEARS THAT THIS COUNTRY MAY HAVE LOST ITS

ENTHUSIASM FOR A CONTINUED VIGOROUS EXPLORATION INTO THE SCIENCE BASE OF HEALTH, AND MAY EVEN PASS THIS RESPONSIBILITY EVENTUALLY INTO THE HANDS OF OTHER NATIONS.

THE ABSURDITY OF SUCH POLARIZED POSITIONS, OF COURSE, IS THAT THEY ARE TOTALLY OUT OF KEEPING WITH THE STRENGTH AND AFFLUENCE OF THIS NATION. THE TONE IS MORE APPROPRIATE TO THE WEAK OR DEVELOPING NATION. OBSERVERS, EVEN FROM THOSE AREAS, COME TO ME AND SAY THAT THEY HAVE DECIDED NOT TO GO FOR SECOND-RATE MEDICAL MANPOWER BECAUSE THEY WOULD EVENTUALLY HAVE TO DO IT ALL AGAIN. I AM VISITING RUSSIA IN A FEW DAYS, WHERE IT HAS ALREADY BEEN DECIDED, I UNDERSTAND, TO ALLOCATE MORE RESOURCES, NOT LESS, TO THE SCIENCE OF MEDICINE; TO ABANDON THE FELSHER SYSTEM AS A MEANS OF PROVIDING INDEPENDENT CARE; TO CHANGE SLOWLY OVER TIME THE RELATIVELY HIGH RATIO OF WOMEN TO MEN IN MEDICINE.

THERE ARE NO COMPELLING REASONS WHY WE SHOULD EVEN TRY TO MAKE THE IMPOSSIBLE CHOICE BETWEEN HEALER AND SCIENTIST IN THE YEAR 1970 IN THESE UNITED STATES. THE FACT THAT WE ARE FACED WITH THIS ISSUE MEANS THAT THE WRONG QUESTIONS HAVE BEEN ASKED. NO MEDICAL SCHOOL SHOULD BE BUILT OR EXPANDED TO SERVE EITHER THE PRESENT OR THE FUTURE WITHOUT AN ADEQUATE SCIENCE BASE. WITHIN THIS GENERAL CONSTRAINT, THERE IS AMPLE ROOM FOR NEW AND ALTERNATIVE MIXES AND FORMS.

MY THIRD AREA IS THE INCREASING POLARIZATION BETWEEN INSTITUTIONS. THERE ARE DIFFERENCES AMONG PROFESSIONAL ORGANIZATIONS, CONSUMER ORGANIZATIONS, HOSPITAL, ACADEMIC, AND MANY OTHER ORGANIZATIONS. I WOULD FOCUS ON THE EMERGING POLARIZATION BETWEEN ACADEMIC AND GOVERNMENTAL INSTITUTIONS, ESPECIALLY STATE AND FEDERAL.

THE PROBLEM IS MAINLY, BUT NOT ENTIRELY, MONEY. DECREASED RESEARCH SUPPORT, INCREASED DEMANDS FOR COMMUNITY SERVICE, ESPECIALLY AUGMENTED

MANPOWER, AND MOST OF ALL, UNCERTAINTY IN FUNDING LEVELS HAVE SHAKEN DEEPLY THE ACADEMIC COMMUNITY, WHICH PERCEIVES AN UNREASONABLE DEMAND FOR INCREASED PRODUCTION WITH DECREASED SUPPORT AT THE COST OF DRASTIC REDUCTION OF QUALITY. "TRADE SCHOOL" AND "HOSPITAL APPRENTICE EDUCATION" ARE TERMS USED.

ON THE OTHER HAND, GOVERNMENT AGENCIES ARE URGED, AS A RESULT OF THE DEEPENING PERCEPTION OF A CRISIS IN HEALTH MANPOWER, TO SEEK EFFECTIVE LEVERAGE FOR INCREASED NUMBERS. AND HERE AGAIN, THE RESULTING DISCUSSION RENEWS THE SCIENTIST-HEALER DEBATE.

MY CONCLUSIONS, AGAIN OVERSIMPLIFIED, ARE THESE. FIRST, THE ORGANIZATION OF MEDICINE REQUIRES A MAJOR CHANGE BY OUR SOCIETY AS A WHOLE FROM THE PRESENT SITUATION IN WHICH THE PRIMARY ORGANIZING PRINCIPLE IS THAT OF THE COMPETITIVE BUSINESS ENTERPRISE. AND SECONDLY, I FIND THAT THE SCIENTIST-HEALER DEBATE HAS UNFORTUNATELY BEEN RENEWED, ALBEIT IN NEW AND MORE SOPHISTICATED FORMS. THE GREATEST DANGER IS THAT INSTEAD OF BUILDING ON OUR RICH RESOURCES, WE WILL SEEK SECOND-RATE SUBSTITUTES.

IT SEEMS TO ME THAT IN MANY WAYS THE MODEL OF THE UNIVERSITY OF ILLINOIS IS HIGHLY PERTINENT IN THESE MATTERS. AS I UNDERSTAND IT, YOU ARE SEEKING A LARGE EXPANSION IN CLASS SIZE BUILT ON THE PRESENT AND PREDICTED SCIENCE STRENGTH OF THE UNIVERSITY AND, IN SOME INSTANCES, OF ASSOCIATED UNIVERSITIES. YOU WILL, IN FACT, UTILIZE A VARIETY OF CAREFULLY SELECTED RESOURCES THROUGHOUT THE STATE. KEY INGREDIENTS IN THIS DECISION, AS I UNDERSTAND THEM, ARE A RECOGNITION OF THE NEED, THE PROVISION OF NECESSARY ADDITIONAL RESOURCES LARGELY BY THE STATE OF ILLINOIS, AND AN ADEQUATE SCIENCE BASE. YOU HAVE, IN SHORT, ACCEPTED THE CHALLENGE TO HELP INCREASE THE NATION'S HEALTH MANPOWER--NOT WITH A VIEW TO SOLVING THE ORGANIZATIONAL PROBLEMS,

BUT IN THE REALIZATION THAT WHATEVER THE ORGANIZATIONAL SYSTEM, THERE WILL STILL BE MANPOWER NEEDS.

THIS CAN BE THE ONLY REASONABLE RESOLUTION OF THE NATIONAL DEBATE--

A DEDICATION TO INCREASE THE MANPOWER AVAILABLE TO A REVISED DELIVERY SYSTEM

AND A WILLINGNESS TO PAY THE PRICE.

There are forces today which ^{have} opened the ~~debate~~ debate of the relationship of science to the practice of medicine - History and good sense argue against choosing either extreme. ^{however} Sometimes the dangers lie more in one direction than in the other. Today in contrast to a very few years ago I find the greater danger is towards the ~~entertainment of inadequate~~ ~~the paying and bleeding of Washington~~ emphasis on quality and on future progress. The question of ~~the~~ the bleeding and purging of George Washington is too remote to help us, but some of you must have been struck as I was by the report in the current annals of Brittonal Medicine of Franklin, Roosevelt's illnesses in the 1930's and '40. Severely crippled by polio - a devastating disease, ~~was~~

If influenza and bronchitis at
a crucial time - a President with
a hemoglobin of 4.5 gms? - a debate
about the existence of congestive failure?
and finally death from a complication
of untreated and indeed at that time
untreatable hypertension. I was struck
~~by~~ I say first by the contrast of the
best medicine ~~of that time~~ ^{perhaps} for the most
important person in the world in 1945
and what can be done today and secondly
by the secrecy of that day - 25-years
of speculation + guess compared to the
front page pictures of ^{Presidents} Johnson's scar
or the daily reports on Eisenhower's
illnesses. Today medicine is more
confident, more objective, ~~more~~ ^{generally} but
deeply no less compassionate

John Gardner

THE ROLE OF KNOWLEDGE AND WISDOM IN YOUR TIME*

ROBERT Q. MARSTON, M.D.**

GENERAL SHELL, MEMBERS OF THE 1970 GRADUATING CLASS, MEMBERS OF
THE BOARD OF TRUSTEES, FACULTY, ALUMNI, FRIENDS ALL:

VMI has been a part of my life as long as I can remember, thus you must realize how pleased and honored I am to stand before you today and read my acceptance of that honor.

QUITE FRANKLY I THOUGHT I HAD MISSED THE CHANCE TO BE ON A COMMENCEMENT STAGE AT VMI WHEN, IN 1944, I MISSED MY OWN GRADUATION. SOME SIX MONTHS PREVIOUSLY, UNDER THE ACCELERATED WORLD WAR II MEDICAL PROGRAMS OF THE TIME, THE PRE-MED STUDENTS HAD LEFT FOR MEDICAL SCHOOL AND THE EXAMINATION SCHEDULES AT THE MEDICAL COLLEGE OF VIRGINIA COINCIDED WITH FINALS AT VMI.

NOW ANOTHER WAR IS DISRUPTING THE GRADUATION PLANS OF STUDENTS THROUGHOUT THE NATION. IN THOSE INSTITUTIONS WHERE EXERCISES WILL STILL BE HELD, THE SENSITIVE SPEAKER WILL ADDRESS HIMSELF TO THIS POINT STRAIGHTAWAY.

THUS, I SHOULD MENTION THAT I AM THE FATHER OF A COLLEGE STUDENT WHO CALLED LAST WEEKEND, FIRST IN DEEP CONCERN ABOUT OUR INVOLVEMENT IN CAMBODIA, AND THEN LATER, IN THE MIDDLE OF THE NIGHT, WITH A DIFFERENT TYPE OF APPREHENSION AS SHE WATCHED WITH DEEP SORROW IRRESPONSIBLE AND UNREASONED BURNING OF A CHERISHED BUILDING. FURTHERMORE, I AM A MEMBER

*COMMENCEMENT ADDRESS, VIRGINIA MILITARY INSTITUTE, LEXINGTON, VA., MAY 17, 1970.

**DIRECTOR, NATIONAL INSTITUTES OF HEALTH, U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE.

OF THE FEDERAL ADMINISTRATION, N.I.H. HAS IT'S OWN ACTIVE MORATORIUM COMMITTEE, AND I SPEAK AT MY ALMA MATER, A MILITARY SCHOOL. THUS, I AM WELL ACQUAINTED WITH THE TENSIONS AND POLARIZATION THAT CULMINATED LAST WEEKEND IN THE ARRIVAL OF 100,000 PEACEFUL DEMONSTRATORS IN WASHINGTON, D.C.

THERE IS NO QUESTION BUT THAT ALL WISH PEACE IN THIS WORLD; BUT ONE OF THE MOST STRIKING INDICATIONS OF THE DEGREE OF POLARIZATION IS THE MARKEDLY DIFFERENT VIEW OF WHAT CONSTITUTES PROGRESS TOWARDS THAT GOAL. ON THE ONE HAND, REPORTS OF ENEMY CASUALTIES OR DESTRUCTION OF FOOD SUPPLIES ARE SEEN AS PROGRESS TOWARD VICTORY; ON THE OTHER, AS SICKENING EVIDENCE OF PERSISTENCE IN A MORALLY WRONG DISSERVICE TO THE DIGNITY OF MAN AND THE WELFARE OF THIS COUNTRY.

FOR MY OWN PART, I CHOSE EARLY IN LIFE THE PATH OF MEDICINE, BOTH AS A PROFESSION AND, PERHAPS MORE IMPORTANTLY, AS A PHILOSOPHY OF LIFE. THUS, I START OUT ON THE SIDE OF THE ALLEVIATION OF PAIN AND SUFFERING, WITH A SPECIAL PROFESSIONAL AS WELL AS PERSONAL CONCERN FOR YOUTH AND THE FUTURE GENERATIONS.

BUT LET ME TURN NOW TO THE MAIN SUBJECT OF MY ADDRESS TODAY--WHICH IS NOT, HOWEVER, ENTIRELY REMOTE FROM THE TURMOIL OF THE DAY.

SHORTLY AFTER GENERAL SHELL ASKED ME TO SPEAK, I KNEW WHAT I WANTED TO TALK ABOUT BECAUSE THERE WAS ONLY ONE SUBJECT IN WHICH I HAD SOME EXPERT KNOWLEDGE AND WHICH WAS PARTICULARLY RELEVANT TO THE CURRENT PROBLEMS OF THE AMERICAN UNIVERSITY. THE TITLE CAME TO ME ONE DAY AS I WAS RUSHING TO A MEETING IN ROCKEFELLER SQUARE IN NEW YORK CITY, AND I NOTICED, OVER THE RADIO CORPORATION OF AMERICA BUILDING, THE FOLLOWING INSCRIPTION: "KNOWLEDGE AND WISDOM SHALL BE THE STABILITY OF THY TIME."

A FEW YEARS AGO SUCH AN OBVIOUS TRUISM WOULD HARDLY HAVE ATTRACTED MY ATTENTION, YET TODAY IT IS APPARENT THAT THE ROLE OF KNOWLEDGE AND WISDOM IN YOUR FUTURE IS NOT ENTIRELY CLEAR.

ON THE ONE HAND, WE ARE COMMITTED AS A NATION TO A RATHER COMPLETE DEPENDENCE ON TECHNOLOGY AS A MATTER OF SURVIVAL. ON THE OTHER HAND, THERE HAS BEEN WITHIN RECENT YEARS A VERY SERIOUS QUESTION AS TO WHETHER THE FUTURE IS MORE LIKELY TO BE HELPED OR HARMED BY THE KNOWLEDGE EXPLOSION WE ARE CURRENTLY EXPERIENCING. THIS CURRENT ATTACK ON KNOWLEDGE GOES WELL BEYOND THE BASIC TENET THAT ALL OF US COULD AGREE ON--THAT KNOWLEDGE, IF NOT COUPLED WITH A DEEP SENSE OF HUMAN VALUES, IS A DANGEROUS THING.

PARENTHETICALLY, I SHOULD LIKE TO MAKE IT CLEAR TO YOU PARENTS, WHO AT SOME SACRIFICE HAVE MADE IT POSSIBLE FOR THESE YOUNG MEN TO STAND HERE TODAY, AND TO YOU GRADUATES WHO HAVE WORKED FOR FOUR LONG YEARS, THAT I AM NOT TALKING ABOUT WHETHER YOUR INVESTMENT IN A COLLEGE EDUCATION WILL BE WORTHWHILE. PREDICTABLY YOU WILL HAVE HIGHER AVERAGE INCOMES THAN PERSONS WITH LESS EDUCATION AND CAN HAVE RICHER, FULLER LIVES--THANKS TO THE PRACTICAL DECISION YOU MADE SOME YEARS AGO; BUT THIS IS NOT WHAT I HAVE IN MIND. RATHER, I AM TALKING ABOUT HOW THE WORLD YOU WILL LIVE IN FOR THE REST OF YOUR YEARS IS LIKELY TO MAKE IMPORTANT DECISIONS.

MOST OF US ASSUME THAT THE FUTURE IS GOING TO BE MORE OR LESS LIKE THE PAST, AND WE MAY FORGET THAT THERE ARE ENTIRELY DIFFERENT MODES OF THOUGHT AND ACTION. INDEED, THERE ARE VARIOUS WAYS OF MAKING DECISIONS. WE HAVE PUT A GREAT DEAL OF EMPHASIS IN THIS COUNTRY ON SEEKING THE MOST LOGICAL, THE BEST INFORMED, THE MOST REASONABLE CONCLUSIONS, EVEN IN SUCH NONOBJECTIVE AREAS AS THE LAW. WE HAVE PUT OUR FAITH IN CAREFULLY

FORMULATED WRITTEN DOCUMENTS SO THAT WE MAY SAY THAT WE HAVE A GOVERNMENT OF LAWS AND NOT OF MEN. YET, THE MOST DURABLE LEGAL SYSTEM OF ALL TIME WAS BASED ON THE CONFUCIAN POLITICAL PHILOSOPHY--A SYSTEM THAT RELIED ON THE EXPECTATION OF GOOD RULERS, RATHER THAN THE DEVELOPMENT OF A MORE LOGICAL LEGAL SYSTEM. A STRIKING CONTRAST TO OUR SYSTEM OF "LAWS NOT MEN."

MY POINT IS THAT WE SHOULD TAKE SERIOUSLY, THOUGH WE MAY NOT AGREE WITH THEM, THE CHARGES THAT KNOWLEDGE AND WISDOM HAVE PRODUCED--AT LEAST AS UNFORESEEN BY-PRODUCTS--THE APPALLING INHUMANITY OF THE BLACK GHETTO, THE SENSELESS DESPOILING OF OUR ENVIRONMENT, THE FAILURE TO MOBILIZE THE DECISION-MAKING PROCESSES THAT ALLOW EVEN A BEGINNING CONTROL OF THE POPULATION PROBLEM. BECAUSE THE SENSE OF URGENCY IS SO GREAT, THERE IS A TEMPTATION TO THROW THE BABY OUT WITH THE BATH WATER--TO STRIKE DOWN THE GOOD WITH THE BAD.

KINGMAN BREWSTER, IN A RECENT EDITORIAL, NAMED "IMPATIENCE" AS A FUNDAMENTAL THREAT TO THE UNIVERSITY. HE SAYS:

WHILE DESTRUCTIVENESS IS LIMITED TO A VERY SMALL NUMBER, AND WHILE ROMANTIC VISIONS OF THE UNIVERSITY AS A MISTY COMMUNITY WITHOUT FORM OR AUTHORITY ARE CONFINED TO A MINORITY, IMPATIENCE IS PERVASIVE.

HE POINTS OUT THAT ONE TARGET OF IMPATIENCE IS INACTION, ANOTHER IS COMPLEXITY, AND A THIRD IS DOUBT.

...BUT WE MUST CONTINUE TO ASSERT THAT IMPETUOUS ACTION, CONSCIOUS OVERSIMPLIFICATION, REFUSAL TO DOUBT, AND THE REJECTION OF REASON ARE ENEMIES OF THE UNIVERSITY.

BECAUSE THERE IS A CRISIS IN THE HEALTH FIELD TODAY, THE PROBLEM OF LONG RANGE INVESTMENT IN THE FUTURE--KNOWLEDGE AND WISDOM, IF YOU WILL--VS. IMPATIENCE TO CORRECT THE IMMEDIATE PROBLEMS OF THE DAY HAS BECOME INCREASINGLY DIFFICULT. THUS, I BELIEVE WE CAN LOOK AT MEDICINE

AS AN EXAMPLE OF THE MORE GENERAL QUESTION I HAVE RAISED TODAY--THE ROLE OF KNOWLEDGE AND WISDOM IN YOUR FUTURE.

My view is colored of course by my job at NIH which has left me unsympathetic for the most part to the health fields.
 Thus, I DESCRIBED THE SITUATION IN THIS FASHION TO SOME OF MY COLLEAGUES RECENTLY. THERE ARE TIMES IN THE LIVES OF EACH OF US WHEN IT BECOMES ESSENTIAL TO TRY TO STEP ASIDE FROM OUR CURRENT BUSY ROLES, AND FROM THE IMMEDIATE PROBLEMS OF OUR SPECIAL PROFESSIONS, IN ORDER TO VIEW CANDIDLY AND DISPASSIONATELY THE HISTORIC SIGNIFICANCE OF OUR FIELD OF ENDEAVOR. THIS IS SUCH A TIME, IT SEEMS TO ME, FOR THOSE OF US WHO WERE CONDITIONED AND DEDICATED TO THE CONCEPT--AND WHO STILL BELIEVE--THAT BASIC BIOMEDICAL RESEARCH IS A MAJOR FOUNDATION FOR THE FUTURE PROGRESS AND EVEN THE SURVIVAL OF MANKIND. UNLESS WE CAN INDEED "SEE OURSELVES AS OTHERS SEE US," WE ARE NOT LIKELY TO UNDERSTAND THE NATURE OF THE RELATIVELY RECENT ATTACK ON SCIENCE IN GENERAL OR ITS DECREASED SUPPORT, TO WHICH I WILL SPEAK FOR BIOMEDICAL RESEARCH IN PARTICULAR.

MANY FACTORS CONTRIBUTING TO THESE CHANGES ARE FAMILIAR TO ALL OF US. BERLINER ^{my Dept -} HAS WRITTEN RECENTLY OF THE REALIZATION OF THE LACK OF OMNIPOTENCE IN THIS COUNTRY, THE NEED TO MAKE CHOICES BETWEEN DESIRABLE GOALS, THE EFFECT OF SOCIAL UNREST, AND THE FAILURE OF SCIENTISTS THEMSELVES TO INTERPRET EFFECTIVELY THE NATURE OF THEIR WORK.

WEINBERG, IN A RECENT ARTICLE IN SCIENCE, DISCUSSES THE FOUR FRONTS FROM WHICH THE ATTACK ON SCIENCE HAS BEEN LAUNCHED. FIRST, HE SAYS, THERE ARE THOSE WHO VIEW THE SCIENTIFIC ENTERPRISE AS CORRUPTED BY POLITICAL MANEUVERING AMONG COMPETING CLAIMANTS FOR THE SCIENTIFIC DOLLAR; SECOND, THE THOUGHTFUL LEADERS WHO SEE A WANING IN THE RELEVANCE OF SCIENCE TO THE PUBLIC INTEREST IN VIEW OF THE GRAVE SOCIAL QUESTIONS OF THE DAY; THIRD, THOSE WHO URGE A SLOW-DOWN BECAUSE OF THE DETRIMENTAL SIDE-EFFECTS OF SCIENCE; AND FOURTH, THE "SCIENTIFIC ABOLITIONISTS" WHO CHALLENGE HUMAN REASON AS A USEFUL TOOL FOR ACHIEVING HUMAN WELL-BEING.

HANDLER HAS EXPLORED ON SEVERAL OCCASIONS A SERIES OF PROBLEMS WITHIN GOVERNMENT, WITHIN SCIENCE, AND WITHIN SOCIETY WHICH HAVE PLACED SCIENCE ON THE DEFENSIVE; WHILE COOPER, SPEAKING FOR THE AAMC, HAS DOCUMENTED SIMILAR CONCERNS AFFECTING THE WHOLE BIOMEDICAL EDUCATIONAL ACTIVITY.

THUS, IT WILL NOT BE HARD FOR SOME HISTORIAN OF THE FUTURE TO DOCUMENT THE REASONS WHY THERE WAS, IN THE LATE 20TH CENTURY, A RATHER AGONIZING REEXAMINATION OF THE NATURE AND LEVEL OF SUPPORT FOR BIOMEDICAL RESEARCH AS THIS NATION BECAME INCREASINGLY, AND QUITE APPROPRIATELY, CONCERNED WITH THE MAJOR AND EVEN SURVIVAL-THREATENING PROBLEMS OF POPULATION, ENVIRONMENT POLLUTION, RACIAL POLARIZATION, EDUCATION, SELF-GOVERNANCE ITSELF, AND THE POTENTIAL FOR INSTANT SELF-DESTRUCTION.

OUR FUTURE HISTORIAN WILL SURELY NOTE THAT IT WAS AT THE PRECISE POINT OF GREATEST STRENGTH AND PRODUCTIVITY THAT THE FORWARD MARCH IN THE SUPPORT OF BIOMEDICAL RESEARCH WAS CALLED FOR AN ACCOUNTING. IT WAS AT A TIME WHEN SOME SPOKE OF THE AGE OF A BIOLOGICAL REVOLUTION; AT A TIME WHEN THE SUCCESS OF BIOMEDICAL RESEARCH WAS HELD UP AS A MODEL FOR SUCH CAUSES AS EDUCATION, THE ORGANIZATION AND DELIVERY OF HEALTH SERVICES, AND THE SALVAGING OF THE ENVIRONMENT. AND PERHAPS HE WILL UNDERSTAND THAT IT WAS LARGELY FOR THIS REASON THAT SOME OF US BECAME CONFUSED OR ANGRY OR FRUSTRATED BY WHAT WE PERCEIVED AS AT LEAST A FAILURE TO TAKE THIS FACT OF SUCCESS INTO ACCOUNT.

THUS, MAJOR QUESTIONS ARE BEING RAISED CONCERNING THE IMPORTANCE OF "KNOWLEDGE AND WISDOM" EVEN IN A SCIENCE-BASED FIELD SUCH AS MEDICINE. ONE OF THE PRACTICAL RESULTS HAS BEEN A SUBSTANTIAL DECREASE IN SUPPORT FOR BIOMEDICAL RESEARCH IN RECENT YEARS.

THE IMPACT OF THIS ACTION ON THE FUTURE CANNOT BE PRECISELY PREDICTED. HOWEVER, I CHANCED UPON AN ARTICLE IN THE CURRENT ANNALS OF INTERNAL MEDICINE ON THE ILLNESS AND DEATH OF PRESIDENT FRANKLIN D. ROOSEVELT. THE AUTHOR, DR. BRUENN, THEN A CARDIOLOGIST AT THE NATIONAL NAVAL MEDICAL CENTER, CONCLUDES WITH THIS SENTENCE:

AS A RESULT OF THIS UNFORGETTABLE EXPERIENCE AND AS A PRACTICING PHYSICIAN, I HAVE OFTEN WONDERED WHAT TURN THE SUBSEQUENT COURSE OF HISTORY MIGHT HAVE TAKEN IF THE MODERN METHODS FOR THE CONTROL OF HYPERTENSION HAD BEEN AVAILABLE.

MANY IN THIS AUDIENCE WILL REMEMBER THAT DURING THE LAST TEN YEARS OF PRESIDENT ROOSEVELT'S LIFE, THERE WERE FREQUENT RUMORS ABOUT THE STATE OF HIS HEALTH. IN 1921 HE SUFFERED AN ATTACK OF POLIOMYELITIS WITH SEVERE AND PERMANENT IMPAIRMENT TO HIS LEGS. AS EARLY AS 1937 HE WAS KNOWN TO HAVE HYPERTENSION. IN MAY OF 1941 HE HAD AN UNBELIEVABLY LOW HEMOGLOBIN OF 4.5 GRAMS, COMPARED WITH A NORM OF 15 OR 16. IN DECEMBER 1943 HE HAD AN ATTACK OF INFLUENZA FROM WHICH HE RECOVERED SLOWLY. THE FOLLOWING YEAR, THERE WAS EVIDENCE OF HEART FAILURE, AND IN THE SPRING OF 1945 HE DIED FROM A COMPLICATION OF HIS HYPERTENSION--A STROKE.

AS I READ THIS 12-PAGE REPORT, I FOUND IT HARD TO BELIEVE THAT OUR KNOWLEDGE ABOUT THE CARE AND TREATMENT OF THE ILLNESSES SUFFERED BY THE PRESIDENT HAD ADVANCED SO MUCH SINCE I WAS IN MEDICAL SCHOOL. HERE WAS THE MOST IMPORTANT MAN OF HIS TIME, SURROUNDED BY THE BEST CARE AND TREATMENT AVAILABLE.

WHAT ARE SOME OF THE CHANGES THAT HAVE TAKEN PLACE IN MEDICINE SINCE THAT TIME? TO BEGIN WITH, THE CHILD CRIPPED BY POLIO HAS ALMOST DISAPPEARED FROM THE SCENE. AN EXPLOSIVE GROWTH IN KNOWLEDGE OF OTHER

VIRAL DISEASES HAS ALSO OCCURRED, BRINGING WITH IT THE DEVELOPMENT OF PREVENTIVE VACCINES THAT ARE REVOLUTIONIZING MEDICINE, PARTICULARLY PEDIATRICS. THE NEW KNOWLEDGE IS EVEN LEADING US INTO EXCITING AREAS INVOLVING THE BASIC NATURE OF LIFE PROCESSES.

THE DISEASE THAT CLAIMED THE LIFE OF FRANKLIN D. ROOSEVELT--HYPERTENSION, OR HIGH BLOOD PRESSURE--IS A GOOD EXAMPLE OF A MAJOR KILLER AGAINST WHICH WE ARE MAKING SUBSTANTIAL PROGRESS TODAY. AN ESTIMATED 17 MILLION AMERICANS BETWEEN THE AGES OF 18 AND 80 HAVE HYPERTENSION, AND MORE THAN 10 MILLION ADULTS SUFFER FROM HEART DISEASE AS A CONSEQUENCE. FURTHERMORE, THIS DISEASE AGGRAVATES AND ACCELERATES THE DEVELOPMENT OF HARDENING OF THE ARTERIES, AND IS A MAJOR CAUSE OF HEART FAILURE, KIDNEY FAILURE, AND STROKE.

WHILE WE DO NOT YET KNOW ALL THE CAUSES OF HYPERTENSION, WE HAVE MADE IMPRESSIVE PROGRESS IN DEVELOPING BLOOD-PRESSURE-LOWERING DRUGS. RESEARCH HAS GIVEN DOCTORS A VARIETY OF SUCH DRUGS FOR TREATING HYPERTENSION OF ALL DEGREES OF SEVERITY, INCLUDING Milder FORMS OFTEN LEFT UNTREATED BEFORE. NONE OF THESE DRUGS IS PERFECT AND SOME HAVE UNPLEASANT SIDE-EFFECTS, BUT THERE CAN BE NO DOUBT THAT THEY ARE RESPONSIBLE FOR REDUCING THE DEATH RATE FROM HYPERTENSION BY NEARLY HALF IN THE PAST DECADE.

SIMILARLY, MAJOR ADVANCES HAVE BEEN MADE IN THE DIAGNOSIS OF HEART DISEASE SINCE ROOSEVELT'S TIME--NOTABLY IN THE DEVELOPMENT AND REFINEMENT OF ELECTROCARDIOGRAPHY.

THE DISEASE WHICH ALL OF US ASSOCIATE WITH FRANKLIN ROOSEVELT--PARALYTIC POLIO--CRIPPLED THOUSANDS EACH YEAR BEFORE THE ADVENT OF SUCCESSFUL IMMUNIZATION. THE BOUT WITH INFLUENZA WHICH FELLED THE WARTIME PRESIDENT IN 1943 LIKEWISE PRESENTS LESS OF A THREAT TODAY.

NOT ONLY ARE WE ABLE TO IMMUNIZE AGAINST INFLUENZA, BUT WE HAVE POTENT DRUGS FOR CONTROLLING THE SECONDARY INFECTIONS WHICH ARE THE MAJOR CAUSE OF DEATH IN INFLUENZA VICTIMS.

I BELIEVE THIS CONTRAST OF YESTERDAY'S MEDICINE WITH TODAY'S, IN WORLDS MARKED BY MAJOR CRISES, TELLS MORE THAN RECITALS OF SCIENTIFIC ADVANCES AND LOWERED DEATH RATES ABOUT THE POSITIVE VALUES OF THOUGHT, SCHOLARSHIP AND KNOWLEDGE. BUT EVEN SO, THE ILLNESSES OF THE WARTIME PRESIDENT, VIEWED IN RETROSPECT, REMIND US THAT TODAY'S KNOWLEDGE IS NEVER ENOUGH AND THAT IMPROVEMENT IN THE LOT OF MAN DEPENDS ESSENTIALLY ON HOW FAITHFULLY WE CARRY ON THE SEARCH FOR NEW KNOWLEDGE AND ULTIMATELY WISDOM.

THERE'S ANOTHER CONTRAST THAT STRUCK ME AS I READ THIS ARTICLE ON MEDICINE 25 YEARS AGO. IT IS THAT MOST OF THIS INFORMATION REMAINED SECRET UNTIL JUST THIS SPRING. CONTRAST THIS WITH NEWSPAPER PICTURES OF PRESIDENT JOHNSON'S GALL BLADDER SCAR, OR THE DAILY REPORTS ON PRESIDENT EISENHOWER'S HEART ATTACKS. PERHAPS THE GREATEST GIFT OF ALL-- OF THE UNIVERSITY, OF THE RESPECT FOR KNOWLEDGE, OF SCIENCE--IS THE OBJECTIVITY AND OPENNESS THEY REQUIRE. IN CONTRAST, DECISION BY PREJUDICE, GUESS, OR PERSONAL WISH, THRIVES ON DARKNESS AND SECRECY.

IT IS STRANGE TO RECALL THAT EVEN AS RECENTLY AS 2 OR 3 YEARS AGO, IT WAS FASHIONABLE TO BEGIN SPEECHES ON ALMOST ANY SUBJECT BY RECALLING THE PERSISTENCE WITH WHICH UNIVERSITIES SURVIVED OVER THE CENTURIES. IN SPITE OF THE TRIALS AND TRIBULATIONS OF SOCIAL UPEHAVAL, POLITICAL EBBS AND FLOWS, FAMINE, WARS, AND EVEN DIRECT ATTACK, THEY COULD BE SAID TO HAVE EMERGED BASICALLY UNSHAKEN.

THINGS HAVE CHANGED SO THAT I WAS NOT SURE I WANTED TO BE THE ONE TO GIVE A COMMENCEMENT TALK THIS YEAR. BUT DURING MY APPROPRIATIONS

HEARINGS, SENATOR COTTON FROM NEW HAMPSHIRE POINTED OUT THAT THE TRUTH MIGHT LOOK DIFFERENT UNDER DIFFERENT CIRCUMSTANCES. HE EMPHASIZED THIS BY THE FOLLOWING STORY:

A FARMER ON HIS WAGON, WITH HIS DOG SITTING BESIDE HIM, WAS GOING AROUND A CURVE ON A NARROW ROAD WHEN A TRUCK RAN INTO HIM, KNOCKING HIS MULE INTO A DITCH, HIS DOG INTO THE OTHER DITCH, AND CRUSHING HIS WAGON. ABOUT THREE MONTHS LATER, THE FARMER APPEARED IN COURT SUING FOR PERSONAL DAMAGES. THE DEFENSE ATTORNEY, IN EXAMINING HIM, SAID, "ISN'T IT TRUE THAT IMMEDIATELY AFTER THE ACCIDENT YOU TOLD THE TRUCK DRIVER YOU WERE PERFECTLY ALL RIGHT? AND HERE YOU ARE IN COURT CLAIMING SERIOUS INJURIES."

"WELL," THE FARMER SAID, "IT'S QUITE TRUE THAT IMMEDIATELY AFTER THE ACCIDENT, I TOLD HIM I WAS FINE, BUT IF YOU LET ME TELL THE STORY I THINK YOU'LL UNDERSTAND WHY I DID THAT."

"I WAS KNOCKED DOWN IN THE MIDDLE OF THE ROAD AND WAS SORT OF DAZED. AS I CAME TO, I HEARD MY MULE THRASHING AROUND ON ONE SIDE OF THE ROAD, OBVIOUSLY BADLY HURT, AND MY POOR DOG WAS WHIMPERING OVER ON THE OTHER SIDE AND COULDN'T EVEN MOVE. THEN I SAW THE DRIVER GET OUT OF HIS TRUCK AND WALK OVER TO THE MULE. HE LOOKED AT HIS BROKEN LEG AND SHOOK HIS HEAD, THEN TOOK OUT HIS GUN AND HELD IT AT THE MULE'S HEAD AND SHOT HIM. NEXT HE WALKED OVER TO MY DOG, EXAMINED HIM A LITTLE, AND HE SHOOK HIS HEAD AGAIN AND RAISED HIS GUN AND SHOT HIM. AND THEN HE WALKED OVER TO ME, AND HIS GUN WAS STILL SMOKING, AND HE SAID, "ALL RIGHT, NOW HOW DO YOU FEEL?"

I THINK PART OF OUR PROBLEM IN DISCUSSING ANYTHING AS SERIOUS AS THE ROLE OF KNOWLEDGE AND WISDOM IN YOUR LIFE IS THAT WE ARE TOO CLOSE TO THE SCENE OF THE ACCIDENT, AND THAT ^{each person feels that} SOMEBODY IS HOLDING A GUN AT HIS HEAD.

MY PURPOSE TODAY IS NOT TO BE PESSIMISTIC--FIRST, BECAUSE THAT IS NOT MY NATURE, AND SECONDLY, BECAUSE THE FACTS INDICATE THAT WE SHOULD BE FACING A GREAT FUTURE IN THIS NATION--A FUTURE IN WHICH WE SHALL ATTACK FAR MORE VIGOROUSLY, HONESTLY, AND EFFECTIVELY, THE AGE-OLD ENEMIES OF MAN--

- WAR
- DISEASE
- POVERTY
- IGNORANCE AND PREJUDICE

AND RELATED TO THESE, BUT PERHAPS MOST IMPORTANT OF ALL--MAN'S INHUMANITY TO MAN.

TO ACHIEVE SUCCESS REQUIRES:

- GREATER DEPENDENCE, NOT LESS, ON KNOWLEDGE AND WISDOM
- DUE ATTENTION TO THE IMPORTANT NEEDS OF A FUTURE AND BETTER WORLD, EVEN AS WE INCREASE EFFORTS TO RESOLVE URGENT, IMMEDIATE PROBLEMS
- RENEWED TRUST AND CONFIDENCE IN EACH OTHER AS RATIONAL BEINGS.

JOHN GARDNER STARTS HIS NEW BOOK, THE RECOVERY OF CONFIDENCE, WITH A QUOTATION FROM THE DIARY OF JAMES ALLEN, WRITTEN ON JULY 26, 1775:

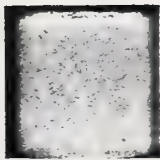
MANY THINKING PEOPLE BELIEVE AMERICA HAS SEEN ITS BEST DAYS.

THE CHALLENGES WHICH FACE YOU GRADUATES AS YOU BECOME, AS MOST OF YOU SURELY WILL, A PART OF THE ESTABLISHMENT OF THE FUTURE, WILL BE GREAT. INDEED, SO GREAT WILL BE THE CHALLENGES, AND SO SOON WILL THEY COME IN YOUR MATURITY, THAT YOU MAY WELL BE CALLED THE DECISIVE GENERATION.

BECAUSE YOUR RESPONSIBILITY WILL BE SO GREAT THAT YOU WILL NEED ALL THE HELP, ALL THE SUPPORT AVAILABLE, AND BECAUSE OF THE TURMOIL BETWEEN

it is filled

YOUNG AND OLD, AS WELL AS YOUNG AND YOUNG, I ~~DECIDED~~ TO END THIS
ADDRESS BY ASSERTING THE FAITH, CONFIDENCE, AND DEDICATION WE OF
PREVIOUS GENERATIONS EXTEND TO YOU. IN TRUTH, WE HAVE NO OTHER CHOICE.
THE FUTURE DOES BELONG TO THE YOUNG. THROUGHOUT THE ANIMAL KINGDOM, ~~AND~~
SECOND ONLY TO THE RELATED INSTINCT OF CREATION ITSELF, ~~AND~~ ^{even,} GREATER, THAN
THE DRIVE TO PROTECT ONESELF [^] IS THE ALMOST UNIVERSAL DRIVE TO PROTECT
THE YOUNG. IN THIS SPIRIT I AM PLEASED TO CONGRATULATE YOU AND WISH
YOU GODSPEED.



Dr. Robert Q. Marston, director of the National Institute of Health since September, 1969, is a 1947 graduate of the Medical College of Virginia. A native of Toano, Virginia, he earned his B.S. degree from Virginia Military Institute and as a Rhodes Scholar, earned a B.Sc. from Oxford University. While a Markie Scholar, he served as assistant professor of medicine at MCV from 1954 to 1957. Following a year at the University of Minnesota, he returned to MCV in 1959 as associate professor of medicine and assistant dean in charge of student affairs. Named director of the University of Mississippi Medical Center and dean of its medical school in 1961, he was promoted to vice-chancellor in 1965.

Doctor Marston was named chairman, director of NIH and director of the division of regional medical programs in 1966. He served as administrator of the Health Resources and Medical Health Administration in the Department of Health, Education and Welfare for several months in 1966.

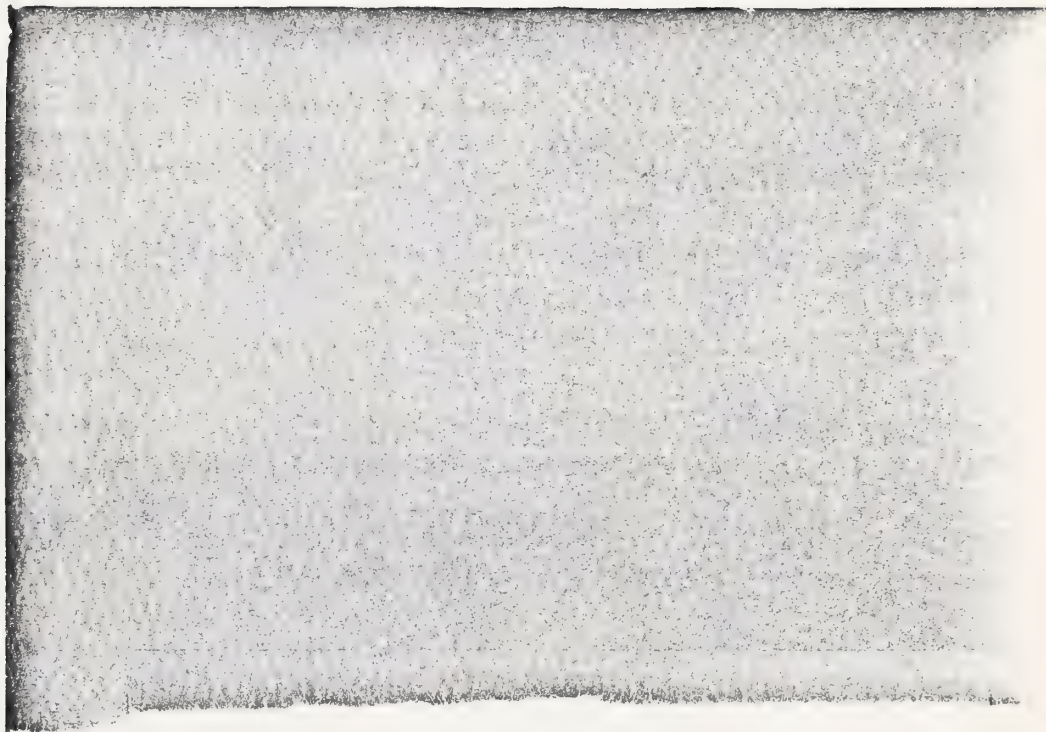
He is a member of the American Academy of Arts and Sciences, the American Association of University Professors, and the American Medical Association.

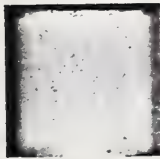


Commencement 1970



Commencement 1970





"Some Thoughts
on the
Health Professions"

Commencement Address

June 6, 1970

Dr. Robert Q. Marston

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SOME THOUGHTS ON THE HEALTH PROFESSIONS

Robert Q. Marston, M.D.

Commencement exercises should look to the future, but this requires an honest appraisal of the present. Thus I have chosen to focus on some of the factors in our present health expectations and realities—to express some thoughts about selected key problems in the professions you enter today.

While I shall try to be objective, let me warn you that I have a deep personal investment in sharing these exercises with you. The dominant medical school of my life has been, of course, the Medical College of Virginia. Raised almost in its shadow, educated in its classrooms and hospitals, sponsored and supported by it, and by Richmond and Virginia, I return to you more tempted to

praise the institution and its people than to analyze the milieu in which we exist today—particularly as it affects these graduating classes.

Another reason for my difficulty in being completely objective is my long involvement in the substance of medical education and research. Today the National Institutes of Health has the primary Federal responsibility for the support of biomedical education and research throughout the country. Thus, I may rise quickly to explain, or even at times defend, practices in these areas. But we all recognize, of course, that the *raison d'être* of the whole research and education enterprise must be better health for people. It is therefore important to say at the outset that I believe we must find, as rapidly as possible, ways to meet the total health needs of our people more predicably and more efficiently than we are doing at present.

This will require major and agonizing change, not only inside but, perhaps even more importantly, outside of the health professions. To do this, however, we must increase—not decrease, as some have suggested—our search for new knowledge through biomedical research. For I am convinced, as I am sure each of you is convinced, that medicine must constitute a mixture of the healer and the scientist—that far from being incompatible in essence, quite the opposite is really true. Indeed, the whole history of man's fight against disease documents the tragedy that attends separation of these two coupled aspects of medicine.

In its earliest forms, the healer aspect was merged with mysticism, largely religious, in the mode of the

priest-physician, but was also evident in an altered form in the power of the king's touch to cure diseases, such as scrofula. In the light of these concepts, it is somewhat surprising that the ancient university at Salerno should have included a faculty of medicine. That decision more than 900 years ago was undoubtedly influenced by the fact that Hippocrates, 15 centuries earlier, had instituted a scientific approach to medical practice.

In this country, the Flexner Report focussed attention on the problems of medicine as we entered the 20th century. But listen to what Blanton says, first about American medicine in the 18th century and then the 19th:

Although the 18th century Virginia doctor was better educated than his predecessor of the 17th century, although he had a more intelligent clientele, more books and better means of communication, he was seriously handicapped by his devotion to theory, and it is doubtful if his notions of medical practice or his therapy were much in advance of those of the preceding century. In fact he had nothing upon which to base any improvement. His method of examination of patients and his conception of the cause and mechanism of disease were fully as faulty as they had been 100 years before . . . The Virginia doctor continued to sweat, blister, purge, vomit and bleed his patients with the same traditional faith and the same inevitable results. The three phlebotomies which figured so largely in the treatment of George Washington's 12-st illness, and about which so much controversy was later

waged, show how firmly this method of therapy was entrenched as late as 1800. In his book on the 19th century, Blanton makes this comment:

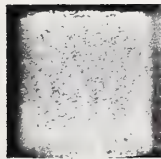
From a single institution in 1765 the number of medical schools had risen to 160 in 1900, some of them good, some of them bad, many of them worthless. Charters were easily secured, candidates were abundant, and there were few examining boards to bar the way to public preferment. Under these conditions, medical schools—many of them fraudulent diploma mills—multiplied rapidly. At one time, Illinois boasted of fifteen schools, Tennessee of ten, Maryland of eight, and Kentucky of seven.

The Flexner Report was followed by a rapid and decisive series of actions designed to protect the quality of both the educational institutions and the practice of medicine. Medical schools and medical practice became rigidly fixed in the post-Flexner pattern and remained so with little change until after World War II. It should be remembered that despite this emphasis on quality, we did tolerate the existence of class B medical schools until the early 1940s; and Hahnemann converted from a school of homeopathy to a school of medicine as recently as 1935. During that relatively long period of little change, not much distinction was made between the healer aspect and the scientist aspect of medical practice. Serious postgraduate study was limited to a relatively few institutions in this country, and we still relied heavily on the great centers of Europe. Indeed, they continued to supply much of the leadership in medicine, both in

practice and on the academic side, until those great centers were destroyed in World War II.

After the war, there were several influences leading to change—notably, the general appreciation of the effectiveness of science in the war effort and the favorable reception to Vannevar Bush's report **Science, the Endless Frontier**, which called for a major national investment in science generally and medical science in particular. The growth of Federal support for biomedical research and development, which has been described often, was substantial during the late 1950s and early '60s. However, during this period of the prevalent acceptance of the support of biomedical science as an appropriate Federal function, the Government was specifically and heatedly deemed an inappropriate source of funds for medical education or the delivery of health services. Not until 1963, with the passage of the Higher Education Act for education generally and the Health Professions Educational Assistance Act for medicine, did the Federal Government become involved directly in service-oriented medical education.

Indeed, the utilization of research funds for nonresearch purposes, despite much loose talk to the contrary, has in fact been controlled by rather rigid monitoring. Failure to show research productivity at the time of competing renewal applications has almost surely jeopardized future support, despite pleas of salutary influences on teaching or service activities. Furthermore, the fiscal monitoring of the use of funds requires that anyone receiving NIH grants shall maintain adequate time-and-effort records. This is not to say that the support of research did not have



beneficial effects both in education and service, for quite the opposite is the case. Faculties with greater diversity of talents and research experience have enriched the entire environment of education.

It was not until 1965, at the end of a major national debate, that the Federal Government became involved in the financing of medical services through Medicare and Medicaid and in the organization and delivery of care through the comprehensive health and regional medical programs. As recently as five years ago, the laws authorizing these programs explicitly prohibited interference with the practice of medicine. The Medicare legislation, for example, stated:

Nothing in this title shall be construed to authorize any Federal office or employee to exercise any supervision or control over the practice of medicine or the manner in which medical services are provided. . . .

And from the regional medical programs:

. . . by these means, to improve generally the health manpower and facilities available to the Nation, and to accomplish these ends without interfering with the patterns, or the methods of financing, of patient care or professional practice, or with the administration of hospitals. . . .

To move from history to the summer of 1970, this country is commonly viewed as being very strong and a world leader in the health field, but also as being the only advanced nation without a workable system for meeting the health needs of all its people. No one who

reads a newspaper, watches television, or talks to others need be reminded of the serious concerns about rapidly increasing medical costs and manpower shortages. At the very least, there is the perception of a widening gap between expectations for personal health services, on the one hand, and the actual delivery of those services on the other.

Quite frankly, I believe the odds are against a rapid and effective resolution of the complex problems involved. A major reason is that health is not a monopoly of hospitals or doctors, of nurses or other health workers. Let me try to illustrate this.

I recently saw a picture in the **Life Science Library** with the following caption:

The woman striding along in the photograph at right is almost 80 years old. Her hearing and vision are better than most American teenagers, her teeth are sound, her heart strong. She is a Mabaan of the Sudan, and most of her fellow tribesmen are as healthy as she. . . . The Mabaans enjoy longevity that would be remarkable in the most medically pampered society. Furthermore, their declining years are almost free of the usual degenerative diseases of old age.

Now let us look at quite a different situation. During the 14th century, traders from ports of the Mediterranean and Black Sea would make their way to China and bring back precious silks and furs. A group of Genoese merchants, returning from such a trip in 1343, took refuge from a band of Tartars in the trading post of Caffa in the Crimea.

The Tartars besieged the town. For three years, neither side made any headway. Then the Tartars stopped catapulting mere rocks over Caffa's walls and began hurling bodies—the corpses of their own men who had died of bubonic plague. The Genoese survivors escaped to their ships and sailed away. Many of them died on shipboard, but the rest landed in Constantinople, Genoa, Venice, and other ports. There they infected other persons, touching off the worst pandemic in the history of mankind—the Black Death.

My point is that the problems of health—indeed, often the most important problems of health—lie beyond the control or expertise of the field of medicine. Those in the community must realize that physicians and allied workers are not generally economists or sociologists, political scientists or politicians, labor leaders or representatives of consumer groups. Health workers should not be expected to solve social problems, but rather to serve primarily in their areas of expertise. Just as primitive man benefited little by ascribing his ills to the whims of angry gods, so modern man will accomplish little by viewing the health professions and institutions as totally responsible for the health ills of the nation.

As long ago as 1932, Walton H. Hamilton pointed out, in a minority report to the Committee on the Costs of Medical Care, that we should not confuse what he called the "technology of medicine" with the organization of medicine.

The problem arises when the ancient, traditional idealism of medicine is confronted, first, with one's need to make a living from the pain of others and, secondly, with

our utilization of the business enterprise as an organizing principle for the delivery of services. This is a matter that is largely independent of the questions concerning the relevance of medical science, the nature of the educational process, the solvency of academic institutions, or the particular deployment of health manpower and other resources throughout the society.

Hamilton said:

The organization of medicine is not a thing apart which can be subjected to study in isolation. It is an aspect of a culture whose arrangements are inseparable from the general organization of society.

* * * * *

A profession has, quite by an historical accident which was not foreseen, fallen into a world of business. . . . As a result the older order of "private practice" is being transformed into a system of competitive enterprise, which no one has consciously willed and which in insidious ways interferes with the great social task which medicine is to perform.

In seeking to meet the health needs of the American people without separating the "technology of medicine" from the organizing principle, unnecessary confusion has occurred. The availability and accessibility of various levels of health care are more closely related to the general organization of our society and of health care specifically than to the curricula of schools, the production of particular types of health workers, or the emphasis on quality within the profession. Specifically, problems of organization are problems of organization—

not of specialization, emphasis on research, or misdirection of academic institutions, to pick three convenient strawmen.

Some speak of the similarities of the health industry to such partially controlled enterprises as public utilities. Some have worked as I have for the concept of regionalization, in hopes that the main focus will be the needs of people rather than the introduction of a rigid system. Others speak of the inevitability of nationalization of health services along lines of one of the models seen in other countries—models, I might say, that present a mixture of advantages and disadvantages. The decisions of this type are not made behind closed doors, but only after serious debate and a careful testing of the complex pressures existent in a democratic society. Indeed, we will probably go through several stages in the evolution of health-care systems. These are urgent problems, important problems; and they will inevitably have a major impact on the nature of medicine and on those who practice it.

Let me turn from these two general points—one referring to the unreality of expecting health resources to compensate adequately for basic community problems (environmental hazards, poverty, distress of modern civilization, or ignorance) and the other suggesting, no less strongly, that without improved and systematic deployment of the limited resources for health on a region-by-region, community-to-community basis, one can expect a continuation of many of the problems we face today. Let me turn, I say, from these statements to a closer examination of what the community might reasonably expect of the

health professions. A revealing contrast can be made with expectations in an earlier time.

William Osler made this observation about doctors and nurses:

There are individuals—doctors and nurses, for example [he said at Johns Hopkins in 1891]—whose very existence is a constant reminder of our frailties; and considering the notoriously irritating character of such people, I often wonder that the world deals so gently with them.

But in the same address, that great and wise physician also stated:

In the gradual division of labour, by which civilization has emerged from barbarism, the doctor and the nurse have been evolved, as useful accessories in the incessant warfare in which man is engaged.

Yet at that time in history, it is unlikely that treatment by a doctor resulted very often in real improvement in the patient's condition.

Many will regard the earlier years of this century as the golden age of physicians and nurses. The community was more apt to be impressed with the little they did accomplish than with the regularity of their failure. Little was expected—which correlated closely with reality. Today, increasingly, a great deal is expected, and the failures, still a depressing, inevitable fact of medicine, must (they say) be somebody's or some institution's fault. Against the unreasonable expectations are other, quite reasonable community concerns. I shall name only three:

- In some areas, an absence of any effective care, as in the isolated rural community or the urban ghetto that has lost its last physician.
- The problem of cost, over which the individual has even less control than in some other markets. He can buy a second-hand car or even a cheaper cut of meat, but there are usually no price choices in medicine—a concern at all income levels, but especially, it seems, to those with middle-level incomes.
- A growing sense of frustration that even in these matters, there is no effective way to make known the community's and individual's grievances, hopes, or expectations.

Now let us look at the other side of the coin—at the medical professions' expectation of the community. Medicine is a difficult profession. It draws into it dedicated and sensitive persons who live their lives with a singleness of purpose that sets them apart from the usual value systems of the culture. Quite frankly, we in the health fields probably tend to expect more understanding and knowledge, and even support, than the community can possibly deliver.

The expectation-reality gap from the professionals' standpoint—physicians, dentists, nurses, allied health workers—focuses along such lines as these:

- The basic pattern of the substance of our professions (as Osler noted) fixes our attention day by day on the individual tragedy and victory, rather than the broader community concern. Especially in areas where our expertise is of limited value, we tend, or

have tended, to dissociate or become angry with growing paper work, misunderstandings, or perceived interference in the practice of medicine.

- Simple overwork and over-commitment is a problem. Just this week I heard another report of an overworked physician leaving his practice abruptly after some months of increased demands occasioned by the illness of a fellow physician. Overloads on emergency rooms, ambulatory care facilities, and hospitals present similar examples in which more is expected of individual institutions than can be reasonably delivered.

- The relationship of hospitals and the community constitutes a special issue. There is much talk today of the problems that hospitals are causing: because of rising costs; because the very walls, some feel, constitute a barrier; and because hospitals represent major investments which are utilized at any one time by only a small portion of the population and are not well coordinated with other local health resources.

Thus there is great need for concerted efforts to close the gaps. Few would deny that the most serious of our problems concern the organization and delivery of preventive, curative, and restorative services. But let us assume for a moment that it were possible to have an idealized system for the organization and delivery of health services—that the problems of the doctor image and the hospital image are things of the past, and that human and other resources are logically deployed and wisely utilized. What are some of the probable areas of

continued gap between expectation and realization? I would choose two major ones: manpower and knowledge.

We must increase the availability of adequately trained health personnel. Under the best of circumstances, however, the age-old inevitable conflicts between the desire, on the one hand, for the best scientific and technical competence and, on the other, for immediately available, personal, and compassionate care will continue. Medicine of the future will still pose this dilemma, and to polarize it in either direction would be a major failure. Human needs cannot be met by the automated lab and the computer, nor by the incompetent, though compassionate well-wisher. Let me say again, the health of people is our reason for being. To achieve it requires both highly specialized personnel and equipment, used with the ultimate goal always in mind.

But even with an ideal "system" and the best of health education, the primary determinant of the level of care would be, as now and in the past, the state of medical knowledge. It seems likely that public expectation will in general continue to exceed what can be done by medical science, despite the explosion of new knowledge occurring in laboratories and clinics throughout the country.

Two factors have probably led to more optimism—therefore, more impatience—than would otherwise be the case. The first has been the truly historic drama of the infectious diseases, where the introduction of antibiotics and the dramatic advances in virology—including the control of diseases through vaccination—constitute an unparalleled phenomenon in the annals of science. But complete and sudden control of the major chronic

diseases, such as those associated with the aging process—arthritis, heart disease, cancer—seems most unlikely, despite the fact that truly encouraging, even exciting progress is being made.

The second reason that expectations from biomedical science tend to exceed reality is the confusion between complex engineering feats and the discovery of basic knowledge. Biomedical today is probing the unknown of the most basic life processes—still areas of profound mystery. The future implications of these endeavors will stand among the most important in the history of all mankind. But because we are working with the unknown, the emphasis must be on creativity, not programming—science, not engineering—the important, not the urgent—genius, not quantity.

The purpose of these commencement exercises is to honor past accomplishments—or more specifically, to honor students and to wish them well. I hope I have said nothing to detract from that worthy purpose, nor from the sense of justifiable pride which those who have excelled and their friends should feel. Yet, to speak quite candidly, I began to wonder as I prepared these remarks, whether there wasn't some sort of incompatibility between the exercise we hold here today—basically an elite exercise—and the far more populist movement of the times. The trend of the day, in the health field and elsewhere, is to meet the needs of all, not just a few; to search for the adequate, not necessarily the best—for quantity at the price of some compromise on quality—for the workable system rather than individual excellence.

The implications of such polarization are most dangerous. One does the best one can in quality and in quantity.

Medicine as a mystic cult and medicine as an apprenticeship have given way to the uniform acceptance of medicine as a scientifically based and functioning profession. In recent years, however, serious scholars and physicians have been asking if we should protect the science base by sequestering it in either the best educational institutions or in research institutes. On the other hand, there are proponents, equally serious, I suppose, of the creation of new "non-science" types of medical schools. These conclusions emanate from concerns for both ends of the spectrum, and from the background of unfortunate evidence of the last few years that this country may have lost its enthusiasm for a continued vigorous exploration into the science base of health and may even pass this responsibility eventually to other nations.

The absurdity of such polarized positions, of course, is that they are totally out of keeping with the strength and affluence of this country. The tone is more appropriate to the weak or developing nations. Observers, even from those areas, come to me and say that they have decided not to go for second-rate medical manpower because they would eventually have to do it all again. And there are no compelling reasons why we should even try to make the impossible choice between quantity and quality in the year 1970 in these United States. The fact that we are faced with this issue means that somehow we are asking the wrong questions. For instance, no medical school should be built or expanded to serve either the present or the future without an adequate science base. Within

this general framework, however, there is ample room for new and alternative educational mixes and forms.

My wife, reading this talk, complained that the tone I have used is too pessimistic, too gloomy. I hope not, for what I am trying to convey is that expectations are likely to be so high **because** so much has been achieved in medicine over the last few decades. The outlook for significant progress could not be brighter. Research is more productive. Brighter and probably even better motivated students are better educated. And the very real problem of the organization and delivery of service is being seriously considered at all levels.

I have just returned from three weeks in the U.S.S.R. It is not possible to compare such different systems of government or medicine, but the visit did provide a perspective from which to view the weaknesses and, especially, the strengths of our own programs.

As you move out today as physicians, dentists, nurses, pharmacists, biomedical scientists, and allied health workers, you take with you not only the best wishes of all of us in this audience, but also high expectations that you can and will solve some of the problems I have touched upon. The health professions are unique among the historical endeavors of man—rich in tradition, dedication, and knowledge. Built on such strengths as these, they need not shy from change required by new social conditions. You enter your professions at an interesting and challenging time. Godspeed

COMMENCEMENT ADDRESS AT THE
UNIVERSITY OF FLORIDA COLLEGE OF MEDICINE*

ROBERT Q. MARSTON, M.D.**

COMMENCEMENT EXERCISES SHOULD LOOK TO THE FUTURE, BUT THIS REQUIRES AN HONEST APPRAISAL OF THE PRESENT. THUS I HAVE CHOSEN TO FOCUS ON THE CONDITIONS OF OUR HEALTH EXPECTATIONS AND REALITIES TODAY, RATHER THAN ON THE DISTANT HORIZON.

WHILE I SHALL TRY TO BE OBJECTIVE, LET ME WARN YOU THAT I HAVE A DEEP PERSONAL INVESTMENT IN SHARING THESE EXERCISES WITH YOU. THIS STEMS FROM MY LONG-STANDING INVOLVEMENT IN THE SUBSTANCE OF MEDICAL EDUCATION AND RESEARCH. THUS, I MAY RISE MORE QUICKLY TO EXPLAIN, OR EVEN AT TIMES DEFEND, PRACTICES IN THESE AREAS. BUT WE ALL RECOGNIZE, OF COURSE, THAT THE RAISON D'ETRE OF THE WHOLE BIOMEDICAL RESEARCH AND EDUCATION ENTERPRISE MUST BE BETTER HEALTH FOR PEOPLE.

LET ME TURN NOW TO MY SUBJECT. NO ONE WHO READS A NEWSPAPER, WATCHES TELEVISION, OR TALKS TO OTHERS NEED BE REMINDED OF THE SERIOUS CONCERNS ABOUT RAPIDLY INCREASING HOSPITAL COSTS AND MANPOWER SHORTAGES. AT THE VERY LEAST, THERE IS THE PERCEPTION OF A WIDENING GAP BETWEEN EXPECTATIONS FOR PERSONAL HEALTH SERVICES, ON THE ONE HAND, AND THE ACTUAL DELIVERY OF THOSE SERVICES ON THE OTHER.

*GAINESVILLE, FLORIDA, JUNE 7, 1970.

**DIRECTOR, NATIONAL INSTITUTES OF HEALTH, U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE.

QUITE FRANKLY, I BELIEVE THE ODDS ARE AGAINST A RAPID AND EFFECTIVE RESOLUTION OF THE COMPLEX PROBLEMS INVOLVED. A MAJOR REASON IS THAT HEALTH IS NOT A MONOPOLY OF HOSPITALS OR DOCTORS, OF NURSES OR OTHER HEALTH WORKERS. LET ME TRY TO ILLUSTRATE THIS.

I RECENTLY SAW A PICTURE IN THE LIFE SCIENCE LIBRARY WITH THE FOLLOWING CAPTION:

The woman striding along in the photograph at right is almost 80 years old. Her hearing and vision are better than most American teenagers, her teeth are sound, her heart strong. She is a Mabaan of the Sudan, and most of her fellow tribesmen are as healthy as she. . . . The Mabaans enjoy longevity that would be remarkable in the most medically pampered society. Furthermore, their declining years are almost free of the usual degenerative diseases of old age.

NOW LET US LOOK AT QUITE A DIFFERENT SITUATION. DURING THE FOURTEENTH CENTURY, TRADERS FROM PORTS OF THE MEDITERRANEAN AND BLACK SEA WOULD MAKE THEIR WAY TO CHINA AND BRING BACK PRECIOUS SILKS AND FURS. A GROUP OF GENOVESE MERCHANTS, RETURNING FROM SUCH A TRIP IN 1343, TOOK REFUGE FROM A BAND OF TARTARS IN THE TRADING POST OF CAFFA IN THE CRIMEA. THE TARTARS BESIEGED THE TOWN. FOR THREE YEARS, NEITHER SIDE MADE ANY HEADWAY. THEN THE TARTARS STOPPED CATAPULTING MERE ROCKS OVER CAFFA'S WALLS AND BEGAN HURLING BODIES--THE CORPSES OF THEIR OWN MEN WHO HAD DIED OF BUBONIC PLAGUE.

THE GENOVESE SURVIVORS ESCAPED TO THEIR SHIPS AND SAILED AWAY. MANY OF THEM DIED ON SHIPBOARD, BUT THE REST LANDED IN CONSTANTINOPLE, GENOA, VENICE AND OTHER PORTS. THERE THEY INFECTED OTHER PERSONS, TOUCHING OFF THE WORST PANDEMIC IN THE HISTORY OF MANKIND--THE BLACK DEATH.

MY POINT IS THAT THE PROBLEMS OF HEALTH--INDEED, OFTEN THE MOST IMPORTANT PROBLEMS OF HEALTH--LIE BEYOND THE CONTROL OR EXPERTISE OF THE FIELD OF MEDICINE. THOSE IN THE COMMUNITY MUST REALIZE THAT PHYSICIANS AND ALLIED WORKERS ARE NOT GENERALLY ECONOMISTS OR SOCIOLOGISTS, POLITICAL SCIENTISTS OR POLITICIANS, LABOR LEADERS OR REPRESENTATIVES OF CONSUMER GROUPS. HEALTH WORKERS SHOULD NOT BE EXPECTED TO SOLVE SOCIAL PROBLEMS, BUT RATHER TO SERVE PRIMARILY IN THEIR AREAS OF EXPERTISE. JUST AS PRIMITIVE MAN BENEFITTED LITTLE BY ASCRIBING HIS ILLS TO THE WHIMS OF ANGRY GODS, SO MODERN MAN WILL ACCOMPLISH LITTLE BY VIEWING THE HEALTH PROFESSIONS AND INSTITUTIONS AS TOTALLY RESPONSIBLE FOR THE HEALTH ILLS OF THE NATION.

AS LONG AGO AS 1932, WALTER HAMILTON POINTED OUT, IN A MINORITY REPORT TO THE COMMITTEE ON THE COST OF MEDICAL CARE, THAT WE SHOULD NOT CONFUSE WHAT HE CALLED THE "TECHNOLOGY OF MEDICINE" WITH THE ORGANIZATION OF MEDICINE.

THE PROBLEM ARISES WHEN THE ANCIENT, TRADITIONAL IDEALISM OF MEDICINE IS CONFRONTED, FIRST, WITH ONE'S NEED TO MAKE A LIVING FROM THE PAIN OF OTHERS AND, SECONDLY, WITH OUR UTILIZATION OF THE BUSINESS ENTERPRISE AS AN ORGANIZING PRINCIPLE FOR THE DELIVERY OF SERVICES. THIS IS A MATTER THAT IS LARGELY INDEPENDENT OF THE QUESTIONS CONCERNING THE RELEVANCE OF MEDICAL SCIENCE, THE NATURE OF THE EDUCATIONAL PROCESS, THE SOLVENCY OF ACADEMIC INSTITUTIONS, OR THE PARTICULAR DEPLOYMENT OF HEALTH MANPOWER AND OTHER RESOURCES THROUGHOUT THE SOCIETY.

HAMILTON SAID:

The organization of medicine is not a thing apart which can be subjected to a study in isolation. It is an aspect of a culture whose arrangements are inseparable from the general organization of society.

* * * * *

. . . A profession has, quite by an historical accident which was not foreseen, fallen into a world of business. . . . As a result the older order of "private practice" is being transformed into a system of competitive enterprise, which no one has consciously willed and which in insidious ways interferes with the great social task which medicine is to perform.

THERE ARE OTHER AREAS WITHIN THE ORGANIZATION AND DELIVERY OF HEALTH SERVICES IN WHICH IT IS LIKELY THAT EXPECTATIONS AND REALITY WILL COLLIDE. MY OWN THOUGHTS AND CONVICTIONS HERE ARE PERHAPS BEST DOCUMENTED IN MY ACTIONS AND WRITINGS WHILE DIRECTOR OF REGIONAL MEDICAL PROGRAMS. I FIRMLY BELIEVE, AND WAS WILLING TO DEVOTE A SIGNIFICANT PART OF MY LIFE TO THE IDEA, THAT WE MUST SEEK MORE ORDERLY AND EFFECTIVE SYSTEMS OF HEALTH CARE. FURTHER, I BELIEVE THAT THIS CAN BEST BE CARRIED OUT THROUGH REGIONALIZATION OF HEALTH RESOURCES WITH--TO QUOTE THE TITLE OF A TALK OF MINE AT THE TIME--"THE PATIENT IN MIND."

LET ME TURN FROM THESE TWO GENERAL COMMENTS--ONE REFERRING TO THE UNREALITY OF EXPECTING HEALTH RESOURCES TO COMPENSATE ADEQUATELY FOR BASIC COMMUNITY PROBLEMS (ENVIRONMENTAL HAZARDS, POVERTY, DISTRESS OF MODERN CIVILIZATION, OR IGNORANCE) AND THE OTHER SUGGESTING, NO LESS STRONGLY, THAT WITHOUT IMPROVED AND SYSTEMATIC DEPLOYMENT OF THE LIMITED RESOURCES FOR HEALTH ON A REGION-BY-REGION, COMMUNITY-TO-COMMUNITY BASIS, ONE CAN EXPECT A CONTINUATION OF MANY OF THE PROBLEMS WE FACE TODAY. LET ME TURN,

I SAY, FROM THESE STATEMENTS TO A CLOSER EXAMINATION OF WHAT THE COMMUNITY MIGHT REASONABLY EXPECT OF THE HEALTH PROFESSIONS. A REVEALING CONTRAST CAN BE MADE WITH EXPECTATIONS IN AN EARLIER TIME.

WILLIAM OSLER MADE THIS OBSERVATION ABOUT DOCTORS AND NURSES:

There are individuals--doctors and nurses, for example [he said at Johns Hopkins in 1891]--whose very existence is a constant reminder of our frailties; and considering the notoriously irritating character of such people, I often wonder that the world deals so gently with them.

BUT IN THE SAME ADDRESS, THAT GREAT AND WISE PHYSICIAN ALSO STATED:

In the gradual division of labour, by which civilization has emerged from barbarism, the doctor and the nurse have been evolved, as useful accessories in the incessant warfare in which man is engaged.

YET AT THAT TIME IN HISTORY, IT IS UNLIKELY THAT TREATMENT BY A DOCTOR RESULTED VERY OFTEN IN REAL IMPROVEMENT IN THE PATIENT'S CONDITION.

MANY WILL REGARD THE EARLIER YEARS OF THIS CENTURY AS THE GOLDEN AGE OF PHYSICIANS AND NURSES. THE COMMUNITY WAS MORE APT TO BE IMPRESSED WITH THE LITTLE THEY DID ACCOMPLISH THAN WITH THE REGULARITY OF THEIR FAILURE. LITTLE WAS EXPECTED--WHICH CORRELATED CLOSELY WITH REALITY. TODAY, INCREASINGLY, A GREAT DEAL IS EXPECTED, AND THE FAILURES, STILL A DEPRESSING, INEVITABLE FACT OF MEDICINE, MUST (THEY SAY) BE SOMEBODY'S OR SOME INSTITUTION'S FAULT. AGAINST THESE UNREASONABLE EXPECTATIONS ARE OTHER, QUITE REASONABLE COMMUNITY CONCERNS. I SHALL NAME ONLY THREE--

- THOSE AREAS IN WHICH THERE IS AN ABSENCE OF ANY EFFECTIVE CARE, SUCH AS THE ISOLATED RURAL COMMUNITY OR THE URBAN GHETTO THAT HAS JUST LOST ITS LAST PHYSICIAN.

- THE PROBLEM OF COST, OVER WHICH THE INDIVIDUAL HAS EVEN LESS CONTROL THAN SOME OTHER AREAS. ONE CAN BUY A SECOND-HAND CAR OR EVEN A CHEAPER CUT OF MEAT, BUT THERE ARE USUALLY NO PRICE CHOICES IN MEDICINE--A CONCERN AT ALL INCOME LEVELS, BUT ESPECIALLY, IT SEEMS, TO THOSE WITH MIDDLE-LEVEL INCOMES.
- A GROWING SENSE OF FRUSTRATION THAT EVEN IN THOSE NONPROFESSIONAL AREAS, THERE IS NO EFFECTIVE WAY TO MAKE THE COMMUNITY'S AND THE INDIVIDUAL'S GRIEVANCES, HOPES, OR EXPECTATIONS KNOWN.

NOW LET US LOOK AT THE OTHER SIDE OF THE COIN--AT THE MEDICAL PROFESSION'S EXPECTATION OF THE COMMUNITY. MEDICINE IS A DIFFICULT PROFESSION. IT DRAWS INTO IT DEDICATED AND SENSITIVE INDIVIDUALS WHO LIVE THEIR LIVES WITH A SINGLENESSE OF PURPOSE THAT SETS THEM APART FROM THE USUAL VALUE SYSTEMS OF THE CULTURE. QUITE FRANKLY, WE IN THE HEALTH FIELDS PROBABLY TEND TO EXPECT MORE UNDERSTANDING AND KNOWLEDGE, AND EVEN SUPPORT, THAN THE COMMUNITY CAN POSSIBLY DELIVER.

THE EXPECTATION-REALITY GAP FROM THE PROFESSIONALS' STANDPOINT--PHYSICIANS, DENTISTS, NURSES, ALLIED HEALTH WORKERS--FOCUSES ALONG THESE FOLLOWING LINES:

- THE BASIC PATTERN OF THE SUBSTANCE OF OUR PROFESSIONS (AS OSLER NOTED) FIXES OUR ATTENTION DAY BY DAY ON THE INDIVIDUAL TRAGEDY AND VICTORY, RATHER THAN THE BROADER COMMUNITY CONCERN. ESPECIALLY IN AREAS WHERE OUR EXPERTISE IS OF LIMITED VALUE, WE TEND, OR HAVE TENDED, TO DISSOCIATE OR BECOME ANGRY WITH GROWING PAPER WORK, MISUNDERSTANDINGS, OR PERCEIVED INTERFERENCE IN THE PRACTICE OF MEDICINE.

- SIMPLE OVERWORK AND OVER-COMMITMENT IS A PROBLEM. JUST THIS WEEK I HEARD ANOTHER REPORT OF AN OVERWORKED PHYSICIAN LEAVING HIS PRACTICE ABRUPTLY AFTER SOME MONTHS OF INCREASED DEMANDS OCCASIONED BY THE ILLNESS OF A FELLOW PHYSICIAN. OVERLOADS ON EMERGENCY ROOMS, ABULATORY CARE FACILITIES, AND HOSPITALS PRESENT SIMILAR EXAMPLES, IN WHICH MORE IS EXPECTED OF INDIVIDUAL INSTITUTIONS THAN CAN BE REASONABLY DELIVERED.
- THE RELATIONSHIP OF HOSPITALS AND THE COMMUNITY CONSTITUTES A SPECIAL ISSUE. THERE IS MUCH TALK TODAY OF THE PROBLEMS THAT HOSPITALS ARE CAUSING: BECAUSE OF RISING COSTS; BECAUSE THE VERY WALLS, SOME FEEL, CONSTITUTE A BARRIER; AND BECAUSE HOSPITALS REPRESENT MAJOR INVESTMENTS WHICH ARE UTILIZED AT ANY ONE TIME BY ONLY A SMALL PORTION OF THE POPULATION AND ARE NOT WELL COORDINATED WITH THE OTHER HEALTH RESOURCES OF THE COMMUNITY.

THUS THERE IS A SERIOUS NEED FOR CONCERTED EFFORTS TO CLOSE THE GAPS.

WITH THESE PROBLEMS IN MIND, I SHOULD LIKE TO TURN TO MY LAST TWO SUBJECTS. LET US ASSUME THAT IT WERE POSSIBLE TO HAVE AN IDEALIZED SYSTEM FOR THE ORGANIZATION AND DELIVERY OF HEALTH SERVICES--THAT THE PROBLEMS OF THE DOCTOR IMAGE AND THE HOSPITAL IMAGE ARE THINGS OF THE PAST. WHAT ARE SOME OF THE AREAS OF POSSIBLE CONTINUED GAP BETWEEN EXPECTATIONS AND REALIZATIONS? I WOULD CHOOSE TWO MAJOR ONES: MANPOWER AND KNOWLEDGE.

WE MUST INCREASE THE AVAILABILITY OF ADEQUATELY TRAINED HEALTH PERSONNEL. UNDER THE BEST OF CIRCUMSTANCES, HOWEVER, THE AGE-OLD INEVITABLE CONFLICTS BETWEEN THE DESIRE, ON THE ONE HAND, FOR THE BEST SCIENTIFIC AND TECHNICAL COMPETENCE AND, ON THE OTHER, FOR IMMEDIATELY AVAILABLE,

PERSONAL, AND COMPASSIONATE INDIVIDUALIZED CARE WILL CONTINUE. MEDICINE OF THE FUTURE WILL STILL POSE THIS DILEMMA, AND IT WOULD BE A MAJOR FAILURE TO POLARIZE IT IN EITHER DIRECTION. HUMAN NEEDS CANNOT BE MET BY THE AUTOMATED LAB AND THE COMPUTER, NOR BY THE INCOMPETENT, THOUGH COMPASSIONATE WELL-WISHER. LET ME SAY AGAIN, THE HEALTH OF PEOPLE IS OUR REASON FOR BEING. TO ACHIEVE THIS REQUIRES BOTH HIGHLY SPECIALIZED PERSONNEL AND EQUIPMENT, USED WITH THE ULTIMATE GOAL ALWAYS IN MIND.

FINALLY, THE PRIMARY DETERMINANT OF THE LEVEL OF CARE IN THE FUTURE WILL BE, AS IN THE PAST, THE STATE OF MEDICAL KNOWLEDGE. IT SEEMS LIKELY THAT PUBLIC EXPECTATION WILL IN GENERAL CONTINUE TO EXCEED WHAT CAN BE DONE, DESPITE THE EXPLOSION OF NEW KNOWLEDGE OCCURRING IN LABORATORIES AND CLINICS THROUGHOUT THIS COUNTRY.

TWO FACTORS ARE LIKELY TO LEAD TO MORE OPTIMISM--THEREFORE, MORE IMPATIENCE--THAN WOULD OTHERWISE BE THE CASE. THE FIRST IS THE TRULY HISTORIC DRAMA OF THE INFECTIOUS DISEASES, WHERE THE INTRODUCTION OF ANTIBIOTICS AND THE EXPLOSIVE ADVANCES IN VIROLOGY--INCLUDING THE CONTROL OF INFECTIOUS DISEASES THROUGH VACCINATION--CONSTITUTE AN UNPARALLELED PHENOMENON IN THE ANNALS OF SCIENCE. THE LIKELIHOOD OF THE COMPLETE AND SUDDEN CONTROL OF MAJOR CHRONIC DISEASES, SUCH AS THOSE ASSOCIATED WITH THE AGING PROCESS--ARTHRITIS, HEART DISEASE, CANCER--SEEMS REMOTE, DESPITE THE FACT THAT TRULY ENCOURAGING, EVEN EXCITING PROGRESS IS BEING MADE.

THE SECOND REASON THAT EXPECTATIONS ARE LIKELY TO EXCEED REALITY IS THE CONFUSION BETWEEN COMPLEX ENGINEERING FEATS AND THE DISCOVERY OF BASIC KNOWLEDGE. BIOMEDICAL RESEARCH TODAY IS PROBING THE UNKNOWN OF THE MOST BASIC LIFE PROCESSES--STILL AREAS OF PROFOUND MYSTERY. THE FUTURE IMPLICATIONS OF THESE ENDEAVORS WILL STAND AMONG THE MOST IMPORTANT IN THE

HISTORY OF ALL MANKIND. BUT BECAUSE WE ARE WORKING WITH THE UNKNOWN, THE EMPHASIS MUST BE ON CREATIVITY, NOT PROGRAMMING--SCIENCE, NOT ENGINEERING--THE IMPORTANT, NOT THE URGENT--GENIUS, NOT QUANTITY.

THE PURPOSE OF THESE COMMENCEMENT EXERCISES IS TO HONOR PAST ACCOMPLISHMENTS--OR MORE SPECIFICALLY, TO HONOR STUDENT AND FACULTY EXCELLENCE IN A VARIETY OF PURSUITS. I HOPE I HAVE SAID NOTHING TO DETRACT FROM THAT WORTHY PURPOSE, NOR FROM THE SENSE OF JUSTIFIABLE PRIDE WHICH THOSE WHO HAVE EXCELLED AND THEIR FRIENDS SHOULD FEEL. YET, TO SPEAK QUITE CANDIDLY, I BEGAN TO WONDER AS I PREPARED THESE REMARKS WHETHER THERE WASN'T SOME SORT OF INCOMPATIBILITY BETWEEN THE EXERCISE WE HOLD HERE TODAY--BASICALLY AN ELITE EXERCISE--AND THE FAR MORE POPULIST MOVEMENT OF THE TIMES. THE TREND OF THE DAY, IN THE HEALTH FIELD AND ELSEWHERE, IS TO MEET THE NEEDS OF ALL, NOT JUST A FEW; TO SEARCH FOR THE ADEQUATE, NOT NECESSARILY THE BEST; FOR QUANTITY AT THE PRICE OF SOME COMPROMISE ON QUALITY; FOR THE WORKABLE SYSTEM RATHER THAN INDIVIDUAL EXCELLENCE.

THE IMPLICATIONS OF SUCH POLARIZATION ARE MOST DANGEROUS. ONE DOES THE BEST ONE CAN IN QUALITY AND QUANTITY. I MIGHT MENTION THAT THE U.S.S.R., FROM WHICH I HAVE JUST RETURNED, HAD ONLY ABOUT 28,000 PHYSICIANS IN 1917. TODAY, THERE ARE MORE THAN 600,000 PHYSICIANS IN THAT COUNTRY AS THE RESULT OF A MAJOR NATIONAL EFFORT.

I STARTED BY SAYING THAT THIS CEREMONY IS FOCUSED ON THE FUTURE. DURING THE NEXT FIFTY YEARS, ALMOST ALL OF THE ADULTS HERE WILL PASS ON. SO IN A VERY REAL SENSE, SUCH A COMMENCEMENT MUST BE TO HONOR TODAY'S YOUTH AND THE FUTURE GENERATIONS THEY WILL SERVE.

ASSUREDLY, THERE ARE CONFLICTS BETWEEN THE EXPECTATIONS AND REALITIES OF THE VARIOUS GENERATIONS. AND THUS I VIEW WITH SPECIAL FEELING THIS

ESSENTIALLY UNIFYING EXPERIENCE--AN EXERCISE ACKNOWLEDGING ACCOMPLISHMENTS
OF THE YOUNG AND THEIR BRIGHT PROMISE FOR THE FUTURE.

August 4, 1970
Senate

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Statement by Director, National Institutes of Health

on
1971 Appropriation Estimates

Mr. Chairman and Members of the Committee:

I am pleased to have the opportunity to appear before you again to testify about the goals, plans and needs of NIH for carrying out its responsibilities for Federal support of biomedical research, for education in the health professions and for biomedical communications.

During the past year there have been a number of important changes in the top level staff at NIH.

- . . . Dr. Leonard Fenninger, who testified last year as Director of the Bureau of Health Professions Education and Manpower Training, has become Associate Director for Health Manpower which is a new position in the Office of the Director, NIH
- . . . He has been succeeded as Director of the Bureau by Dr. Kenneth Endicott who has been Director of the National Cancer Institute since 1960.
- . . . The new Director of the Cancer Institute is Dr. Carl Baker who has been with the Institute in various senior capacities since 1949.
- . . . Dr. Thomas Chalmers, who was Assistant Chief Medical Director for Research and Education at the Veterans Administration, has joined NIH as Associate Director for Clinical Care Administration and as the Director of the Clinical Center.

. . . Mr. Storm Whaley has joined the NIH staff in the newly created post of Associate Director for Communications. Mr. Whaley was formerly Vice-President for Health Sciences at the University of Arkansas and director of its Medical Center.

. . . Dr. Carl Kupfer, who was chairman of the Ophthalmology Department at the University of Washington, is on board as Director of the new National Eye Institute which is now in full operation. The creation of the Eye Institute paves the way for greater emphasis on research on the prevention, treatment and cure of eye diseases and visual disorders.

Another area to which NIH is giving increased attention is research on diseases of the lung. As you know, we have brought together, for coordinated program direction in the National Heart Institute, various research programs on respiratory problems heretofore supported by other Institutes and we have changed the name of the Heart Institute to the National Heart and Lung Institute. This is not a piece of window dressing but a recognition of the fact that the responsibility of the Institute has been broadened in response to a growing national health problem and the emergence of scientific opportunities for productive research on lung diseases. The budget includes an increase of \$2.5 million for research on pulmonary diseases.

Frankly, Mr. Chairman, we would much rather expand the role of an existing Institute than create a new one to meet new needs and opportunities. The missions of the ten existing Institutes, as defined in their enabling

legislation, cover the full spectrum of disease and biomedical research problems. The organizational framework therefore already exists for accelerating work on any disease problem or in any area of special scientific concern. In a time of many urgent competing demands for public funds, more can be accomplished if such additional funds as are available can be devoted directly to program objectives. The proliferation of Institutes is not only wasteful of resources--both in terms of staff and money--but it encourages a narrowness of focus that is not in the long-term interest of research on the interrelated problems of human disease.

The organization of NIH is already rather complex. As its activities are funded through 21 items in the bill, I should like to submit for the Committee's use--and for the record--an organization chart which has been specially prepared for these hearings. It shows

- . . . the relationships of the various Institutes and Divisions to the functions of NIH;
- . . . which Institutes and Divisions have separate appropriations and the amount requested for each in the budget; and
- . . . the name of the Director responsible for the activity.

Before commenting on specific budget items, I should like to take a broad look at the responsibilities and programs of NIH. As you are well aware, the rapidly rising public demand for the readier availability, easier accessibility, higher quality, and lower cost of health services of

all kinds requires the rapid expansion of the national pool of suitably trained manpower. NIH has a major role in Federal support for the development of health manpower. It is one of our most difficult and most challenging tasks.

The institutions in which health manpower must be trained are plagued by a number of unsettling problems. They are faced with

- . . . rapidly increasing costs, especially in teaching hospitals,
- . . . competition for scarce faculty,
- . . . restless students,
- . . . public demands for greater community services, and
- . . . unpredictable income from patients, insurance, and local, state and Federal governments.

All these factors militate against their willingness--and their ability--to expand their teaching activities or to experiment with new curricula and methods.

Despite these difficulties, there has been some heartening progress since the Health Professions Educational Assistance Act was passed in 1963. The number of students admitted to medical schools has increased by nearly 20% and reached almost 11,000 last September. The number of registered nurses in practice has increased by nearly 10% during the past three years. The construction programs have helped to build 12 new medical schools, 34 new schools of nursing, 6 new dental schools, 1 new school of public health and 2 new allied health training centers. Assistance has been given to 32 medical schools in serious financial straits. This year, scholarships have been given to 8,500 nursing students with serious financial need, representing 8% of total nursing school enrollments. More than 3,000 of these students come from

families making less than \$5,000 a year. However, much more encouraging than these initial gains is the fact that all those engaged in training of health manpower are dedicated to the improvement of the health of the American people, that they recognize the national needs, and that they are confident these needs can be met.

The relationship of the NIH research programs to meeting these national needs requires some comment because it is often misunderstood. I commented briefly last year on the criticism that support for research has unbalanced the academic community and detracted from the performance of its educational function. I said then that the imbalance in the academic community is not due to too much research support but to the unfortunate fact that, until recently, this has been the sole kind of Federal support available. The clear and urgent need for comparable educational support is certainly not a consequence of the existence of research support. On the contrary, the need for educational support would have been acutely felt much earlier and would be even greater now if it were not for the existence of quite substantial research support.

The availability of Federal support for research during the past decade has had a tremendous and very healthy effect on the medical schools of this country. Substantial Federal funding of research made it possible to attract to their faculties highly competent physicians and scientists who derived much of their income from research but who were then, for a small investment of the schools' own funds, also available for teaching. This not only made it possible to increase the number of faculty members, despite small and static educational

funds, but it broadened the range of expertise of the faculty and, thereby, greatly enhanced the quality of the instruction provided. A notable feature of the development of medical schools during the past decade is the sharp increase in the proportion of full-time faculty which was largely made possible by the availability of research support. The influx of biomedical investigators into the medical schools on a full-time basis has, incidentally, also had a similar effect on the quality and the scope of the medical services rendered by the medical schools.

The deep involvement of medical schools in research is neither accidental nor ill-advised. Through the joint action of the Congress and the Executive Branch--in which this committee played a very prominent part--this country chose academic institutions as the principal place where research should be done. In most countries it is mainly done in quite separate research institutions. An incidental effect of this country's decision was to change--I should say, lift--the face of education in biology and medicine. Moreover, we chose to support research mainly through individual project grants, awarded on the basis of the individual merit of the applicant and his proposal through a widely praised review system relying on the scientific judgment of the applicant's peers and on the judgment of prestigious Advisory Councils concerning the proposal's relevance to the achievement of national research goals.

Most importantly, it should be recognized that the purpose of research support--and of the appropriations which make it possible--is to stimulate the search for knowledge and for the better treatment of disease. It was never intended to produce more doctors, dentists, or

nurses, or to provide a general subsidy for medical schools or other academic institutions. That it has resulted in the training of better physicians is, however, a secondary effect which should not be lightly discounted.

The heavy investment in biomedical research during the past decade has had a predictable result: The U. S. is now the acknowledged leader in this field of human endeavor. A significant relaxation of our efforts will, of course, have an equally predictable result. The direct and personal benefits which the people of this country have derived from this leadership are difficult to describe in simple terms. In fact, the practice of medicine has been revolutionized during the past twenty years as a direct result of research. Yet the unsolved problems of disease are so numerous and tragic that even the most notable advances seem disappointing in comparison. For example, the recent statement by Dr. Proctor Harvey, the president of the American Heart Association, that the death rate due to diseases of the heart and blood vessels among Americans under 65 is 20% lower today than in 1950 and that improved diagnosis and treatment has saved 51,000 lives since 1950 is overshadowed by the fact that cardiovascular disease nevertheless continues to be responsible for 54% of all deaths.

The fight against disease is a long, hard road. Quick victories cannot be expected. The investment in biomedical research must necessarily be a long-term investment. If we set our sights mainly on solutions that can be achieved in a year or two, we shall be frittering away our efforts and our resources on the easy edges of the hard-core problems of disease. A coat of paint can quickly make the house look better but it will never get rid of the termites.

A new dimension has been added to the national health problem by the rapidly accumulating--and, by now, quite overwhelming--evidence of the health risks inherent in alterations in our biological environment brought about by technological advances in other fields. A vast and diverse array of actually or potentially hazardous elements are involved, ranging from uncontrolled radiation to enzymes in detergents. One of the factors that has allowed this situation to develop--and one which makes it difficult to select appropriate remedies--is the lack of basic knowledge about the long-term effects on the human body of many of these new elements in the environment.

It is the special and unique role of the National Institute of Environmental Health Sciences to address itself to this lack of knowledge. Its intramural research and research-grant programs are focused on the biological effect of these hazards, singly and in combination, and particularly on the specific biological processes that are triggered or disrupted by exposure to various environmental pollutants. A knowledge of the impact of a suspected pollutant on the human body, the safe limits of exposure, a fairly exact determination of the body's reaction to it, and a clear understanding of the biological processes involved in this reaction are essential to the development of adequate and reasonable control measures. It is the purpose of this new Institute, now in its third year, to establish this basic information so that those, in other agencies and private industry, responsible for eliminating or controlling these hazards can do so intelligently and effectively.

The contribution of research training grants and fellowships to the health-manpower and health-service problems is even more direct than that of research grants. The primary purpose of postdoctoral training grants and fellowships is to maintain the momentum of research by training young investigators but they also play an important role in the training of medical specialists. At the postdoctoral level, research and education are truly intertwined. A knowledge of research methods is as essential to a medical educator as riding to a cowboy. While training grant and fellowship support have produced much of the medical school faculty, their output has fallen short of present requirements and is very far short of future requirements. The shortage of U.S.-trained faculty is evident from a recent survey by the Association of American Medical Colleges which shows that nearly 18% of the MDs on the faculty of U. S. medical schools--2,295 out of 12,867--are foreign-trained. The percentage for PhDs is considerably lower: 10%--or 666 out of 6,436--are foreign-trained. Overall, one medical school faculty member out of six received his training abroad. The AAMC points out that the equivalent of 10 medical schools are staffed by foreign-trained faculty.

The inadequacy of our physician-training efforts is illustrated by the fact that our dependence on foreign medical graduates to provide patient care has steadily increased. At the present time, one-sixth of

all physicians practicing in the United States are graduates of foreign medical schools. There are nearly 50,000 foreign medical graduates over 90% of whom are providing patient care. They make up 25% of the interns and 32% of the residents in our hospitals. In hospitals not affiliated with medical schools, there are two foreign medical graduates for every three interns graduated from U. S. schools.

Since I appeared before you last year, we have launched the Physician Augmentation Program, for which funds were included in the revised 1970 estimates. Under this program, an additional 500 first-year places will be provided in 29 schools starting with the 1970-1971 academic year. Over the next four years, the enrollment of these 29 schools will therefore have been increased by 2,000 students.

Dr. Endicott can discuss in more detail the status of the health manpower programs--all of which show some progress though not enough is yet being done.

One area to which, I believe, we should give much more attention is the training of what, for want of a better name, is frequently called allied health manpower. Many tasks in the health care field, ranging from the cleaning of teeth to the normal delivery of babies, can be competently performed by people with far less training than a full-fledged dentist or physician.

There are compelling reasons for giving serious consideration to a radical modification of our health-care system in this direction if we are to close the gap between needed health services and available manpower in a reasonable length of time and at a feasible cost.

The budget request for health manpower activities show an increase of \$31.7 million. The major increases requested are:

- . . . \$14.6 million for project grant support for schools of medicine, dentistry, and osteopathy;
- . . . \$4.0 million for project grants for nursing schools;
- . . . \$3.3 million for project grants for allied health training.

On the basis of their relative priority, basic improvement grants for schools of veterinary medicine have been eliminated (a reduction of \$2.7 million) and funds for project grants for graduate public health training have been reduced by \$400,000. The net increase for institutional support is thus \$19.1 million.

For student assistance, there is a net increase of \$7.9 million. This includes an increase of \$9.8 million for nursing scholarships and \$2.2 million for allied health traineeships. The major offsetting reduction is a decrease of \$3 million in the request for student loans in the health professions. The budget is predicated on the assumption that scholarships and direct loans will go for the most part to students from families with incomes below \$10,000. It is expected that students from higher income families will be able to take advantage of the guaranteed loan program of the Office of Education for support or to secure private loans.

The budget request for the construction of health educational, research and library facilities is \$126.1 million, the same amount as last year. It is entirely for educational facilities, as was also the case last year.

I am pleased to be able to report that the 1971 budget estimates for research reverse the downward trend of the past two years. There is a net overall increase of \$61.8 million--or just over 6%--in the budget request for the Institutes and Research Divisions. The increases are for specific programs about which the Institute Directors, who are here, will be glad to answer questions.

The reduction in the level of research support due to the imposition of expenditure controls, by the Congress and the Bureau of the Budget, on top of the already tight budgets for fiscal years 1969 and 1970, is now having a delayed impact on the biomedical research community. We have abandoned our 1969 policy of trying to support as many project as possible with the funds available by renegotiating the amount of awards for existing grants. Successive renegotiations would quickly have reduced support to a level at which effective research was no longer possible. We believe that better progress will be made by adequately supporting the projects for which awards are made than by inadequately supporting a larger number.

As you know, increased costs have also forced us to phase-out 10 of the 93 general clinical research centers.

The increase of \$61.8 million for the research Institutes in this year's budget results from the following major increases

- . . . \$22 million for research on cancer, especially the role of viruses;
- . . . \$12 million for heart and lung disease, especially arteriosclerosis and lung disease;

- . . . \$13 million for family planning and population research;
- . . . \$5.7 million for early childhood development and maternal nutrition;
- . . . \$6 million for dental research, especially dental caries, and
- . . . \$10 million for other important research areas.

Partially to offset the cost of increased research in these high priority areas, there is a reduction of \$10.5 million--or about 20%--in the funds allocated to general research support grants. This represents an accommodation to fiscal necessities. We continue to regard this program as an extremely important component in the array of mechanisms for the support of biomedical research. Its objectives are

- . . . to strengthen the research programs of the institutions;
- . . . to encourage the recognition and support of emerging talent;
- . . . to create central institutional research resources;
- . . . to compensate for institutional program unbalances created by a national system of fund allocation oriented to disease categories;
- . . . to stabilize, at least to a modest extent, the support of research-oriented faculty members during periods of otherwise unstable research funding.

A recently completed study of the program indicates that it has succeeded remarkably well in attaining its objectives, and that in so doing, it has advanced the Nation's research efforts significantly.

The restoration of Stone House, which is a permanent part of the facilities for the John E. Fogarty International Center for Advanced Studies in the Health Sciences, has been completed. The building is now in use. The first of the Fogarty Center's conference series was held there in April. The scholars-in-residence program is also under way. Funds are included in the budget to bring nine such scholars to the Center for a year but, as most of them cannot be absent from their regular posts abroad for more than six months, it will actually be possible to bring almost twice that many to the Center during the year. Three scholars are in residence now and four more are expected during the next six months. Plans for the new building for the Fogarty Center were somewhat delayed by an argument with the Fine Arts Commission but are now expected to be completed in December.

The appropriation for the current fiscal year includes planning funds for the construction of a building for the Lister Hill National Center for Biomedical Communications of the National Library of Medicine. Biomedical Communication is the indispensable link between those engaged in research, education and health service. The National Library of Medicine has long since outgrown the static role of a repository of information and now plays a vital part in the creation of a versatile and responsive national communications system. The budget request for NLM includes a small increase of \$506,000.

The total budget request for NIH is \$1,509,595,000. This is an increase of \$92.9 million--or 6.6%--over the FY 1970 operating level, excluding funds carried over.

The items shown under NIH in the budget tables and justifications also include a request for \$32.4 million for "scientific activities overseas". This is a department-wide program for the use of so-called counterpart funds --that is, foreign currencies accumulated and held by the United States under Public Law 480. The amount requested will be allocated as follows:

\$10.4 million to NIH

\$15.2 million to the Health Services and Mental Health Administration

\$ 4.8 million to the Environmental Health Service

\$ 2.0 million to the Food and Drug Administration

\$ 8,000 to the Office of International Health

Last year, Mr. Chairman, I expressed the hope that circumstances this year would permit resumption of a more vigorous pace for the health programs for which NIH is responsible. I am glad that this hope was justified, at least in part. The budget requests now before you provide for significant increases in a number of important manpower and research programs. It is true that other programs are still at a rather Spartan 'maintenance' level. Overall, however, this budget will assure continued progress in attaining the two prerequisites for improving the health of the American people: better knowledge of the cause and cure of disease and adequately trained people to apply it.

STATEMENT BY

DR. ROBERT Q. MARSTON
DIRECTOR, NATIONAL INSTITUTES OF HEALTH
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

BEFORE

SUBCOMMITTEE NUMBER 4

OF THE

COMMITTEE ON THE DISTRICT OF COLUMBIA

UNITED STATES HOUSE OF REPRESENTATIVES

SEPTEMBER 16, 1970

Mr. Chairman:

We appreciate this opportunity of appearing before you to testify on H.R. 18568 and H.R. 18606, bills "To provide support for the health manpower needs in the medical and dental educational programs for private nonprofit medical and dental schools in the District of Columbia."

The bills would authorize the Secretary of Health, Education, and Welfare to make grants to private accredited nonprofit schools of medicine or dentistry in the District of Columbia, notwithstanding any other Federal funding. The grant to any medical school in any fiscal year would be equal to \$5,000 multiplied by the number of full-time students enrolled in such school. In the case of a dental school, the grant would be equal to \$3,000 multiplied by the number of full-time students enrolled.

The bills would authorize appropriations of \$6,200,000 for fiscal year 1971, \$6,750,000 for fiscal year 1972, and such sums as may be necessary for fiscal year 1973. The appropriation levels for the first two years seem to be related to computations for enrollments at the medical schools at George Washington University and the medical and dental schools at Georgetown University and do not take account of enrollments at the Howard University medical and dental schools.

2.

In testimony before your Committee, representatives of George Washington University stated that "The financial needs of the schools of medicine and school of dentistry at George Washington University and Georgetown University are in such a critical stance that we come to the Committee of the District of Columbia, as a State government, for the support of the medical schools and dental school at these two universities."

The Department is well aware of the difficulties that private schools of medicine and dentistry are encountering in the face of spiralling inflation and increasing demands for increased enrollments and extensions of health services. While general assistance for health professions schools should be handled through the health professions educational assistance programs or whatever programs of this nature result from our current reappraisal in the health manpower training field, there is much to be said for providing special assistance to medical and dental schools in the District of Columbia area. In principle, we think the provision of financial assistance by States to medical and dental schools within their respective jurisdictions is commendable; and the provision of such aid for private schools in the District of Columbia would be consistent with this salutary practice of a number of the States.

3.

Under the Health Professions Educational Assistance programs, assistance has been given to medical, dental, and other health professions schools for the construction of teaching facilities including both new construction and essential modernization and renovation; formula grant support for educational programs; student aid through both scholarship and loan programs; and special project support for a wide variety of educational purposes including expansion of enrollment, curriculum revision, and assistance to schools in serious financial straits.

Since fiscal year 1968, schools of medicine in serious financial straits have been receiving assistance under the Health Professions Educational Assistance special improvement grant and, beginning in fiscal year 1970, special project authorities of section 772 of the Public Health Service Act. (Special improvement grants were first authorized in fiscal year 1966, but no funds were available for this program until fiscal year 1968.)

The statutory limitation on the amount of a special improvement grant to any school was \$300,000 for fiscal year 1968. The statutory limitation of \$400,000 for fiscal year 1969 was removed by the Health Manpower Act of 1968 on the grounds that it was not possible at that time to predict the amounts that would be necessary to save some of these schools, and that the ceiling could jeopardize or thwart the achievement of goals which are necessary for the amelioration of existing critical health manpower shortages.

4.

The Health Professions Educational Assistance special project authorities that were extended and amended by the Health Manpower Act of 1968, and which went into effect July 1, 1969, specifically provided for project grants to assist schools which are in serious financial straits to meet the cost of operations or to meet accreditation requirements. The broadened special project purposes also included expansion efforts and efforts to effect significant improvements in curriculums.

In fiscal years 1969 and 1970, substantially increased assistance has been given to schools in serious financial difficulties.

The George Washington University and Georgetown University medical schools and the school of dentistry of Georgetown University have been receiving assistance under these Health Professions Educational Assistance authorities. (See attachments 1, 2, 3, and 4 for summaries of awards to the respective schools.) In fiscal year 1970, under these authorities for institutional grants and student aid, George Washington University medical school received \$704,188; Georgetown University medical school received \$1,364,239 and its dental school received \$756,949. In addition, the George Washington University medical school received a \$15.3 million construction grant for its basic science building.

5.

It is of particular interest in the context of these hearings that the amounts previously mentioned for institutional aid included special project grants to assist the schools in their financial straits. George Washington University medical school received for this purpose \$248,100 in fiscal year 1968, \$265,632 in fiscal year 1969, and \$284,600 in fiscal year 1970, or a total of \$798,332. For this same purpose, Georgetown University medical school received \$120,968 in fiscal year 1969 and \$219,346 in fiscal year 1970, or a total of \$340,314. It is anticipated that both schools will file applications and will be eligible for such assistance in the current fiscal year. Assistance to each of these schools for continuation of projects already approved is projected (subject to the availability of funds) for fiscal year 1971 at \$289,000 for George Washington University medical school; \$1,634,000 for Georgetown University medical school; and \$400,000 for Georgetown University dental school. The schools are also eligible to apply for supplemental assistance. (In fact, George Washington has just requested an extension of the date for filing its application for supplemental grant for fiscal year 1971.) It should also be noted that in 1970 Georgetown University medical school received a \$680,206 grant under the Physician Augmentation Program (under the Health Professions Educational Assistance Special Project Authority) with a tentative commitment for continuation of the project for the following amounts for succeeding fiscal years--\$1,312,000 for 1971; \$1,819,000 for 1972; and \$2,435,000 for 1973.

6.

The Health Professions Educational Assistance authority is due to expire June 30, 1971. In appraising these programs and the current legislative authorities and developing our legislative proposals for submission to the Congress, you may be sure that serious consideration is being given to appropriate means of providing assistance to medical and dental schools in serious financial straits.

With the various studies we are conducting to develop our recommendations in the health manpower training field, we will also be studying methods for more precisely determining the cost of providing assistance to medical and dental schools in serious financial straits, both public and private.

The financial relationships of medical and dental schools are of an extraordinary complexity in keeping with the many functions they perform, and the different relationships they have with parent universities, their own or affiliated hospitals, public-local, State, and Federal programs for health services as well as programs of education and research, and their relationships with a wide variety of third-party payers for services as well as with those who provide private sources of income.

7.

We are supporting cost allocation studies in 38 medical centers, including Georgetown University and George Washington University. The primary objectives of the studies are to develop methods to ascertain the costs of the respective functions and to determine the nature and form of the fiscal imbalances in these institutions. The development of these methods will allow a more accurate identification of these needs which are justifiably supported by Federal funding programs and those which should be corrected by alteration in the institutions' policies or administration or by support from local resources. When this type of information is in hand, we will be in a much sounder position to meet head on the issues raised by the legislation before us today.

To repeat: In principle, we think the provision of financial assistance by States to medical or dental schools within their respective jurisdictions is commendable. However, in the face of the dearth of information as to the actual fiscal situation of these institutions separately, or as compared with each other, or with other institutions similarly situated in the United States, we seriously question the specific approach taken in H.R. 18568 and H.R. 18606.

Therefore, we cannot now endorse as a reasonable approach a per capita payment by the Federal Government--based on total school enrollments--that cannot be related in a more persuasive way to public purposes to be served and to actual institutional needs. We

8.

are particularly disturbed that the per capita level of support proposed appears to have been derived from calculations based on anticipated operating deficits. While we are not opposed to per capita formula grants as such, we would not want to establish--through the enactment of these bills--a precedent for that method of Federal deficit financing for medical and dental schools.

It should be noted, also, in evaluating the bills before us today, that the schools are asking the Federal Government for unconditional support which is significantly higher and without the attendant responsibilities required under per capita legislation in the several States providing similar assistance.

As you know, of the 49 private medical schools in the country (excluding those of the District of Columbia), 21--or 43%--receive no support from their States. Of the 8 States which assist the remaining 28 schools, NONE gives a straight per capita support for total enrollments without any conditions, as proposed in this bill we are considering today. The States which authorize fixed dollar per capita support have done so on the basis of per capita per STATE RESIDENT, or per capita per State resident with required enrollment increases, or--when not limited to State residents--per capita for new places or per increased enrollment. Only one State authorizes an amount per capita for total enrollments, and that State requires a 20% enrollment increase as a condition of eligibility for the assistance.

The remaining States which are providing operating assistance to private schools are doing so on the basis of negotiated subsidies which make it possible to assess the current financial situation of the institution and to assess also the appropriate and equitable role the State can play in assisting the operation of the institutions in light of all relevant factors.

Finally, Mr. Chairman, we have been concerned that the bills H.R. 18568 and H.R. 18606 would in effect cast the Department of Health, Education, and Welfare in the role of a State Government through its provision of direct support to these institutions.

We understand that a modification of the bills has been proposed by George Washington and Georgetown Universities to meet difficulties on the above point. Appropriations would continue to be made to HEW (as originally proposed), but HEW awards would be to the District Government rather than to the institutions directly. While this is an improvement, for the reasons indicated above we do not favor any proposal of this nature at this time. We have discussed this proposed legislation with the Office of Management and Budget and that Office concurs in our recommendation.

I will be happy to answer any questions you may have.

HPEA Aid toGeorgetown University Medical School

	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Basic Improvement Grants	\$ ---	\$87,379	\$242,240	\$255,500	\$259,500	\$259,500
Special Improvement Grants	---	---	---	. 0	120,968	219,346 ^{1/}
Special Improvement Grants (Physician Augmentation Program)	---	---	---	---	---	680,206 ^{2/}
HPEA Construction	(Grant of \$2.0 million awarded in 1965 for replacement and expansion of basic science laboratories and library)					
Student Aid						
Loans:						
Capital contrib.	58,500	76,500	108,000	98,283	44,588	33,954
Revolving Fund	---	---	---	56,000	151,068	76,033
Scholarships	---	---	23,200	42,485	70,000	95,200

1/ Projected amounts of continuation of approved project in future years, subject to availability of funds, are as follows:

1971	\$322,000
1972	400,000
1973	400,000

2/ Projected amounts for continuation of approved project in future years, subject to availability of funds, are as follows:

1971	\$1,312,000
1972	1,819,000
1973	2,435,000
1974	2,600,000

HPEA Aid toGeorge Washington University Medical School

	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Basic Improvement Grants	\$ ---	\$80,010	\$223,128	\$233,500	\$238,000	\$238,000
Special Improvement Grants	---	---	---	248,100 ^{1/}	265,632	284,600 ^{2/ 3/}
Special Improvement Grants (Physician Augmentation Program)	---	---	---	---	---	(No application)
HPEA Construction	(Grant of \$15.3 million awarded January 28, 1970, for multipurpose basic science building)					
Student Aid						
Loans:						
Capital Contrib.	87,017	141,962	276,037	205,037	128,388	65,732
Revolving Fund	---	---	---	30,901	69,132	34,781
Scholarships	---	---	21,200	39,202	59,875	81,075

1/ Of this amount, \$190,248 was not spent.

2/ Total grant award was \$284,000. Of this amount, \$190,248 was carried over from FY 1968, so that the amount actually provided from 1970 funds was \$94,352.

3/ Projected amounts for continuation of approved project in future years, subject to availability of funds, are as follows:

1971	\$289,000
1972	289,000

HPEA Aid toGeorgetown University Dental School

	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Basic Improvement Grants	\$ ---	\$ 77,203	\$215,006	\$228,500	\$233,000	\$233,000
Special Improvement Grants	---	---	---	0	157,396	344,196 ^{1/}
HPEA Construction	(Grant of \$3.3 million awarded in 1966 for replacement and expansion of basic science and clinical facilities.)					
Student Aid						
Loans:						
Capital Contrib.	85,466	137,326	198,000	85,048 ^{2/}	53,973	29,771
Revolving Fund	---	---	---	103,353	138,787	66,582
Scholarships	---	---	21,200	38,473	63,600	83,400

1/ Projected amounts for continuation of approved project in future years, subject to availability of funds, are as follows:

1971	\$400,000
1972	400,000
1973	400,000

2/ Does not include \$27,599 awarded, not used, and later withdrawn.

Summary for FY 1970: HPEA Institutional and
Special Project Grants and Student Aid Funds

	<u>George Washington</u>	<u>Georgetown</u>	
	<u>Medical 1/</u>	<u>Medical</u>	<u>Dental</u>
Institutional (Formula)	\$238,000	\$259,500	\$233,000
Special Project	284,600 <u>2/</u>	899,552	344,196
Student Aid			
Loan:			
Capital Contrib.	65,732	33,954	29,771
Revolving Fund	34,781	76,033	66,582
Scholarships	81,075	95,200	83,400
	<hr/>	<hr/>	<hr/>
Total	704,188 <u>1/</u>	1,364,239	756,949

1/ George Washington also received a \$15.3 million construction grant award in FY 1970.

2/ Total award. Includes \$190,248 carried over from FY 1968.

STATEMENT BY
DR. ROBERT Q. MARSTON
DIRECTOR, NATIONAL INSTITUTES OF HEALTH
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
BEFORE THE
SUBCOMMITTEE ON PUBLIC HEALTH AND WELFARE
OF THE
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE
HOUSE OF REPRESENTATIVES

SEPTEMBER 30, 1970

Mr. Chairman and Members of the Committee:

It is a pleasure to be here today to testify on S. 3418, a bill "To amend the Public Health Service Act to provide for the making of grants to medical schools and hospitals to assist them in establishing special departments and programs in the field of family practice, and otherwise to encourage and promote the training of medical and paramedical personnel in the field of family medicine, and to alleviate the effects of malnutrition, and to provide for the establishment of a National Information and Resource Center for the Handicapped.", and related bills.

Family Practice

Title I of S. 3418 would authorize a new five-year program of grants to medical schools:

- (1) to operate separate departments devoted to teaching and instruction (including continuing education) in all phases of family practice;
- (2) to construct facilities appropriate to carry out family practice training programs whether as a part of a medical school or as a separate outpatient or similar facility;
- (3) to operate or participate in special training programs for paramedical personnel in the field of family medicine; and
- (4) to operate or participate in special training programs for medical personnel to head departments of family practice or otherwise teach family practice in medical schools.

This Title would also authorize grants to public or private nonprofit hospitals which train medical students, interns, or residents:

- (1) to operate special professional training programs (including continuing education) in family medicine for medical students, interns, residents, or practicing physicians;
- (2) to construct facilities appropriate to carry out these programs whether as part of a hospital or as a separate outpatient or similar facility;
- (3) to provide scholarships, fellowships, or stipends to interns, residents, or other medical personnel who are in need of such assistance to participate in accredited training programs in the field of family medicine and who plan to specialize or work in the practice of family medicine; and
- (4) to operate or participate in special programs for training paramedical personnel in the field of family medicine.

For the purpose of making the grants to medical schools and to hospitals, the bill would authorize appropriations of \$50 million for fiscal year 1971, \$75 million for fiscal year 1972, and \$100 million each for fiscal years 1973, 1974, and 1975.

We are in full accord with the objective of encouraging and promoting the training of physicians and paramedical personnel to help to meet the needs of each patient for personalized care of his health needs. At a time of continuing increasing specialization and with a variety of types

of personnel and facilities often contributing to the care of a single patient, educational programs for health manpower at all levels must emphasize coordination and continuity for the health needs of individuals.

Comprehensive health care includes preventive, diagnostic, therapeutic, rehabilitative and health-maintenance services, and requires appropriate referral of patients for selected specialized and supporting services. This implies and requires effective coordination among physicians within the various specialties and with personnel in the nursing and allied health fields. It also requires adequate interpretation to the patient and his family of the nature and progress of the patient's illness and the services being recommended and provided in the context of the patient's expectations.

Continuity of care may be provided by several physicians working together in formal or informal association, with each member having access to the patient's records. Continuity may also be facilitated by the appropriate use of nurses and other allied health personnel under proper supervision, in situations where continuing attention by the same physician is not possible.

Methods of achieving the goal of comprehensive and personalized services for each individual are in a state of experimentation and change. A variety of terms are used to describe the kind of care or practice, or the type of practitioner, that is wanted: family practice, general practice, personal medicine, primary care, first-contact physician, generalist, comprehensive medical care are some of them. Many physicians

have been, of course, providing this kind of care right along. You are familiar with the manner in which general practitioners, internists, and pediatricians perform these roles.

In addition family practice is being increasingly recognized as a new medical specialty. The specialty has its own examining board, the American Board of Family Practice. The specialty requires a three year post-M.D. program of training consisting of one year of internship and two of residency. Like the specialties of pediatrics and internal medicine, it is patient-and family-oriented rather than disease-or-system-oriented.

The emergence of the new specialty of family practice provides one more evidence of the response to the need for personalized and comprehensive health care, and for encouraging concepts of personalized service and continuity of care across the board in medical training.

Increasing numbers of medical schools are teaching aspects of family care. In the last few years or so, substantial numbers of schools have recognized the need to develop a more concerted effort to give students, interns, and residents the opportunity to learn first hand more about the medical care of the patient as an individual, and as a member of the family, and about community resources that are available to augment the physician's efforts to provide effective care to all members of families.

We are very much interested in the development of programs that provide medical students with experiences in comprehensive health care and in family practice.

Under the Health Professions Educational Assistance Construction program we are assisting in the construction of medical schools and their teaching hospitals. Space for family practice activities (both the teaching and clinical practicum) is being constructed as an integral part of the teaching facility. This Committee is aware that we also administer authorities for construction of nurse training facilities and for allied health training centers. The Hill-Burton medical facilities construction program provides support for the construction and modernization of private, nonprofit medical facilities, including ambulatory care facilities of the type required for family medicine teaching programs. In addition, one of the priorities provided under the new Hill-Burton legislation is for projects for the construction of facilities which will provide training in health or allied health professions. In view of these authorities, the construction authorities proposed in this bill are unnecessarily duplicative and overlapping. We feel strongly that, particularly in the case of construction aid, it is more reasonable, feasible, and economical to provide general rather than categorical construction assistance.

In addition to the authority for the construction of teaching facilities under the Health Professions Educational Assistance Construction Program there is presently authority under the Health Professions

Educational Assistance Improvement Grants Programs for grants to medical schools for special projects to plan, develop, or establish new programs of education or modification of existing programs; to effect significant improvements in curriculums of such schools; to develop training for new levels or types of health professions personnel; to expand training programs; or to strengthen or improve programs of education. Health Professions Educational Assistance Institutional (Formula) Grants may also be used by the schools, at their discretion, for teaching purposes relating to family medicine.

A number of schools of medicine and osteopathy and their teaching hospitals have used, or have indicated their intention to use, at least a portion of their formula grants or their special project grants under the Health Professions Educational Assistance Program to support the teaching of continuity, primary, or family-oriented care through a variety of means. Some of these grants have been used to establish or strengthen departments of family medicine; others, to support family practice or continuity care teaching programs on an interdepartmental basis; and still others, across-the-board, exposure of students to family care.

Among the medical schools that have been awarded special project grants for expansion of enrollment (including Physician Augmentation projects) under the Health Professions Educational Assistance Program, a number will give additional emphasis to the teaching of family medicine in the course of achieving the goal of increased output.

I should particularly like to address myself for a moment to the provision [section 761(a)(1)] of S. 3418 which would authorize grants to medical schools to operate separate and distinct departments devoted to the teaching and instruction in all phases of family practice. There is an implication in this provision that the only way for a medical school to emphasize family practice is to establish and operate a separate department of family practice. We question that implication. Our experience has shown that some schools are concentrating their educational program on the production of family physicians; other schools are developing family practice or continuity care programs on an inter-departmental basis, so that the concepts of family practice become an integral part of the teaching program of many departments. We feel that such efforts also have great potential and are making major contributions to both concepts and practice of family medicine. These contributions should also be recognized.

While a strong administrative mechanism for family practice teaching in the medical schools is desirable, a separate department is only one type of administrative unit. The AMA Ad Hoc Committee on Education for Family Practice, in its report entitled "Meeting the Challenge of Family Practice", has stated in discussing medical school administrative units for family practice:

"There are various ways in which this need--that is, for an administrative unit--might be satisfied: An academic department of family medicine is one way; another is the creation of a division of family medicine within a major department such as medicine; a third way might be the creation of an interdepart-

mental unit; and there might be other approaches which would serve satisfactorily in a given setting."

We are aware that the legislative flexibility for the support of family medicine activities through a variety of kinds of administrative units is provided in some of the other bills now pending before your committee, for example, H.R. 18716 and H.R. 13064. However, this legislative flexibility presently exists in the Health Professions Educational Assistance Special Project authority. (c.f. Section 772 of the Public Health Service Act.) This broader authority permits the support of a variety of administrative mechanisms within the medical school for carrying out family practice teaching programs and is especially suited to modification of training programs to coincide with changing patterns of organization of medical services.

In any event, we strongly oppose legislating the organizational structure within medical schools for teaching family medicine, especially when some schools are successfully developing such programs without separate departments.

With respect to the provisions of the bill for grants for special training programs for paramedical personnel in the field of family medicine, several other legislative authorities already exist under which such activities may be aided. Authority for Federal support of training of physician assistants and other new types of paramedical personnel has been provided under the Allied Health Professions Personnel Training authority for developmental grants (section 794 of

the Public Health Service Act). As you know, bills to extend and broaden this authority are presently in Conference. This authority has real potential for the preparation of new types of personnel to assist in providing the type of care toward which this bill is directed.

The allied health legislation would also provide authority for grants to a variety of agencies, institutions, and organizations for planning, developing, and establishing new programs of training paramedical personnel or effecting significant improvements in curricula. We feel that this legislative authority is sufficiently broad to cover the purposes of this bill and is the more appropriate vehicle for their accomplishment.

A number of projects involving the preparation of nurses to play a role in the provision of family-oriented medical care have been conducted under nurse training and public health training authorities.

These have included, among others, projects to plan and evaluate experimental training programs for such clinical nursing specialists as pediatric nurse practitioners.

Mr. Chairman, with respect to internship and residency training, we must remember that the costs of salaries of interns and residents (and to somewhat less extent teaching costs for these training programs) are now met largely out of payments for patient services, including reimbursements for care rendered by such interns and residents under medicare, medicaid, and other third-party payment plans.

In view of the evolving character of the concept of family medicine, there are advantages to aiding activities in this field under broad, flexible legislative authorities such as those contained in the Health Professions Educational Assistance Act. This type of authority permits the support of alternative approaches to training in the provision of comprehensive and continuing care to individuals and families, pending further evaluation of the various mechanisms for educating personnel and organizing medical services in this field. It also allows aid for training in family medicine to be provided in conjunction with aid directed toward another purpose such as expansion of enrollment of medical schools.

The Health Professions Educational Assistance authority is due to expire June 30, 1971. The Department is in the process of developing its legislative recommendations for modification and extension of that Act and other health manpower legislation. Because of the close relationship between the family medicine activities proposed in S. 3418 and the Health Professions Educational Assistance Programs, we recommend against enactment at this time.

In any event, the Administration strongly opposes the enactment of educational categorical grant authorities such as those embodied in this bill which would duplicate authorities or mechanisms which already exist and under which the purposes of this legislation could be achieved.

Malnutrition

Title II of S. 3418 would authorize the Secretary of Health, Education, and Welfare to (1) make grants and contracts with medical schools, appropriate graduate schools, and nursing schools to establish courses dealing with malnutrition; (2) make grants and contracts with institutions and individuals for research into malnutrition; (3) establish special projects to provide practical training and experience for students of courses in malnutrition; and (4) provide fellowships and financial assistance to students to encourage and enable them to pursue studies and engage in activities in poverty areas relating to malnutrition.

Title II also directs that, in selecting educational institutions to carry out its purposes, priority be given to those located in poverty areas and authorizes appropriation of "such sums as may be necessary" to carry out these programs.

The Department is in accord with the basic objectives of Title II, which we understand to be (1) the creation of an effective force of field workers trained in malnutrition and nutrition to deal directly with this problem on the community level, especially in poverty areas, and (2) to encourage high-quality biomedical research in the area of malnutrition and nutrition.

The first objective is that of creating an effective force of field workers to deal directly on a community level with parents and children in vulnerable population groups, particularly in poverty areas.

For this purpose, Title II would support the establishment of courses in medical, nursing, and graduate schools dealing with malnutrition, its causes and effects, and its early detection and effective treatment. The students taking such courses would receive practical training and experience through special projects, particularly in poverty areas. In order to encourage enrollment in such courses, fellowships and financial assistance would be provided.

The Department feels that there is a distinct need for providing education on malnutrition on a *practical* level to enable workers emerging from such an educational effort to engage in down-to-earth community public health activities such as counseling mothers what foods to buy with a severely limited poverty budget, how to feed infants and preschool children, how to plan meals and budget expenditures for several days ahead, and the like. In this connection, the Department of Agriculture is devoting approximately \$50 million to an outreach program to bring nutrition information to low-income families.

It is our judgment, however, that grants to the types of schools specified in this bill will not solve the problem of malnutrition among the poor. Even if we could assume that the people who most need help would come into contact with physicians and registered nurses--a not too likely prospect in present circumstances--the pressures to expand medical and nursing curricula and the demands of practice have produced a situation where physicians and nurses have necessarily become dependent upon specialists in nutrition to counsel patients and prescribe diets.

We have no reason to believe that adding nutrition courses to training programs of these health professionals would ease the pressures on their time that lead them to depend on nutritional specialists. We feel that the goal of enhancing community health activities in this area can best be met by focussing training on auxiliary personnel who are most likely to be dealing with nutrition problems on a day-to-day basis. One example which holds great promise is the development of community health workers operating out of the neighborhood health centers. These workers are in tune with the culture in which they are operating and can, after some training, be very effective in communicating the basics of good nutrition.

If we are to deal successfully with the problem of malnutrition, several elements of the problem must be taken into account. First, and most importantly, the poor are malnourished because they cannot afford the foods they need for a nutritious diet. Without the assurance of a reasonable minimum income, such as would be provided by enactment of the President's Family Assistance Plan, we cannot expect education to have much impact. Secondly, many people, rich and poor alike, are malnourished because they are ignorant of what constitutes good nutrition. In order to alleviate this problem, we need to train the types of health workers who will be most effective in communicating the facts about good nutrition. Both the Nurse Training and Health Professions Educational Assistance Act improvement grant authorities provide the statutory mechanisms under which components of medical and nursing education may be strengthened.

We also call your attention to the fact that special training-- both long- and short-term--in public health nutrition may be provided under the existing authority of sections 306 and 309 of the Public Health Service Act to professional health personnel including physicians, nutritionists, health educators, and social workers.

Although completely in accord with the second objective of Title II-- support of research and research training in nutrition--the Department would point out that adequate authority now exists in the Public Health Service Act for all of the functions provided in this section, and more. These are now being discharged competently and extensively by the National Institutes of Health which is supporting a very substantial research and training effort pertaining to malnutrition and nutrition, both in the laboratories and clinics of several of the National Institutes in Bethesda and at numerous medical centers throughout the country.

These activities cover the full spectrum of nutrition from fundamental studies concerning the metabolic and physiologic actions of the various

nutrients and their requirements in man to practical, applied research aimed at alleviation of malnutrition and nutrition-deficiency diseases

both in the United States and abroad. In addition, the NIH finances and

administers a substantial and comprehensive program providing research fellowships and research training grants in nutrition. In the conduct of

the very extensive nutrition programs of the NIH, the advice and assistance of many experts in the field are obtained continuously from the scientific staff of the National Institutes of Health and, on a consultative basis, from a very broad range of outside experts.

A special in-depth study in 1965 established the total expenditures of the NIH related to nutrition research at a level of \$23,800,000. A more recent review indicates a similar level of expenditure for nutrition research in fiscal year 1968, as well as a total expenditure of approximately \$2,100,000 for nutrition research training and \$850,000 for fellowships. A substantial portion of this effort is related directly to nutritional deficiencies, malnutrition, and deficiency diseases and their various causes, and methods of diagnosis and treatment. Such levels of support are strong evidence that research in the field of malnutrition/nutrition is being given a very high priority by the NIH.

The Department feels strongly that Title II, in subsection (2), addresses itself to questions to which most answers already exist; in the instances where the relevant knowledge is as yet incomplete, these answers are being furnished continuously and are expected to be known in the near future. To use the language of the bill, the causes and effects of malnutrition are known, means for its detection are known, and the means for effective treatment of malnutrition are likewise known. The recent National Nutrition Surveys which pinpointed pockets of malnutrition among our poorest populations would indeed not have been possible were it not for the existing knowledge concerning the causes and effects of malnutrition and individual nutritional deficiencies, and methods for detection and diagnosis of such deficiencies.

No doubt the *primary* tool for nutritional improvement is financial improvement such as would be provided by the enactment of the President's proposed Family Assistance Plan. While the first objective of Title II appears to be the provision of better nutrition education for health

workers and members of the public, we believe the means chosen are not entirely appropriate and to some extent duplicative of existing authorities. The second objective of Title II, that related to biomedical research on malnutrition, though relevant, is being carried out broadly and effectively at present. The authorization in subsection (2) of the bill would be an unnecessary duplication of existing authorities.

In summary, we are in complete accord with the fundamental objectives of the proposed legislation. We feel that that part of Title II devoted to the education and creation of malnutrition field workers to work on the community level, particularly in poverty areas, is based on a true need but is somewhat misdirected. Rather than the establishment of a new categorical program of this type, we would recommend the continued development and enhancement of the ongoing programs of this and other agencies directed toward meeting the totality of the needs of our Nation's disadvantaged. We feel strongly that the second portion of Title II addressed to research in malnutrition is being carried out effectively under present arrangements, that special legislation for this purpose is not necessary and could result in a duplication of efforts.



National Information and Resource Center for the Handicapped

Senator Dole's bill, S.4002, to establish a National Information and Resource Center for the Handicapped, was passed by the Senate as Title III of S.3418. This proposal reflects the Senator's finding that disabled people, and groups interested in improving health, housing, recreation, rehabilitation and other services for individuals with handicapping conditions, have no single source of authoritative and complete information about governmental or other services available to them. In effect, this proposal would expand and broaden the scope of the authority for the Secretary of Health, Education, and Welfare which is contained in Section 7 of the Vocational Rehabilitation Act, as amended, to operate an information service and to make available to agencies, organizations and persons concerned with vocational rehabilitation, useful information on resources for various disabilities and other matters helpful in promoting the rehabilitation of handicapped individuals. The establishment of such a Center would be responsive to requests from many individuals and groups for guidance in finding and utilizing all available services and knowledge to meet the many needs of disabled people of all ages.

The information and data with which the Center would be concerned includes, but is not limited to, information about medical and rehabilitation facilities and services; day care and other programs for young children; education; vocational training; employment; transportation, architecture and housing (including household appliances and equipment); recreation; and public or private programs established for, or which may be used in, solving problems of the handicapped.

As the sponsors of this legislation have pointed out, a disabled person and his family have a special challenge they must meet each day -- that of accepting and working with a disability in such a manner as to become and remain as active and useful, as independent, secure and dignified as the disability will allow.

Many disabled young people and adults are cut off from normal experiences in going to school, and to church, participating in community activities, and in getting and keeping a satisfactory job. They must be helped, however, to utilize all available resources for their personal and social development. Some health and medical services are available in each State for children with mental and physical impairments. Many communities have special educational programs particularly designed for handicapped children. For those who do acquire some education and can seek employment, there is individualized help from the State-Federal vocational rehabilitation program. Services such as diagnosis and medical care, counseling, training, and assistance in finding employment are generally available from this public program. And in many communities voluntary programs aid many disabled children and older people.

For some handicapped people, a long period of care and training in rehabilitation centers and in workshops must be undertaken before the individual can be employed. For these and many other physically impaired people, there is great need for available information about community resources for outdoor recreation and other leisure time activities.

Information about technical schools and universities which can accommodate physically handicapped but intellectually able youth is often lacking. Available data are always incomplete and out of date. For the disabled who are going to school or trying to obtain and keep a job, accurate knowledge about which public buildings and which community plants and private office buildings are accessible and useable by them is of prime importance. They are also vitally interested in accessible public transportation--which bus lines, airlines or other modes of special transportation are able and willing to carry disabled people.

Many national organizations and community groups are now expressing concern about more economical and useable housing, recreation and transportation services for impaired people. In addition to ramps, wide doors and elevators, what architectural modifications will enhance self-care and independent use of the structure or facility? The National Conference on the Disabled and the Disadvantaged, sponsored by the Department and many national groups, highlighted the great demand for up to date information on research findings, the results of pilot and demonstration projects, and training and service efforts in the several States. The National Commission on Architectural Barriers recommended the establishment of information and technical assistance efforts to serve program developers, civic groups, research firms and others concerned with improving services for the disabled.

A major recommendation of the 1200 architects, engineers and civic planners who participated in barrier-free workshops of the American Institute of Architects last year dealt with sharing new technology and practice about the requirements of disabled persons.

In recent years many other commissions, task forces and committees working on single or multi-problem areas have referred to the necessity for communicating quickly and effectively new knowledge to physicians, rehabilitation practitioners and others engaged in the delivery of services to people who need them. These include the President's Commission on Heart Disease, Cancer and Stroke, the Department's Task Force on the Feasibility of a National Mental Retardation Information and Resource Center, and the President's Committee on Mental Retardation.

Earlier similar needs and recommendations resulted in the formation of information exchanges in the education, scientific and medical fields.

Examples are ERIC in the educational area, MEDLARS at the National Library of Medicine, and the Clearinghouse for Federal Scientific and Technical Data of the Department of Commerce. Services from these systems are available to researchers, planners, students, consumers of services, physicians and other professional groups, as well as the general public.

The Department suggests that a necessary and perhaps primary task of any new Center should be that of (1) helping to orchestrate the existing information systems, (2) filling in gaps in data by concentrating at least initially on one or more of the presently unorganized information areas referred to in the proposed legislation and (3) advising potential users about the resources of the existing and any new systems.

In summary, the Department supports this title of the bill. For reasons of proper administration, however, we recommend that implementation not begin until Fiscal Year 1972. In addition, we recommend that during the first year of the Center's operation, a complete plan be developed for utilizing pertinent data in ERIC, MEDLARS and other information and resource systems. Concurrently, a plan for obtaining, handling and releasing other new data, in accordance with a system of national priorities, should be developed.

Mrs. Kathleen Arneson, Special Assistant to the Commissioner of the Social Rehabilitation Service, is with me today and will be happy to answer any questions you may have on this part of the bill.

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